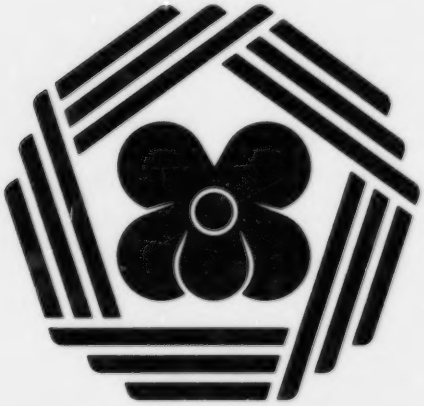
NEW BRUNSWICK
NOUVEAU-BRUNSWICK

PROCEEDINGS

POTATO GROWERS'

SEMINAR AND TRADE SHOW

February 13-16, 1984



Department of Agriculture & Rural Development
Ministère de l'agriculture et de l'aménagement rural

PROCEEDINGS

POTATO GROWERS'

SEMINAR AND TRADE SHOW

February 13-16, 1984

Seminar Co-ordinator: P.S. Jones, Wicklow, N.B.D.A.
Program Co-ordinator: Dr. R. Parry, Wicklow, N.B.D.A.

Theme: Good Management - The Key to Success

Sponsored by: The Potato Division, N.B.D.A.
in cooperation with the N.B. Potato Industry

Hon. M. MacLeod, Minister

Tim Andrew, Deputy Minister

FOREWORD

The Annual Potato Growers' Seminar and Trade Shows were held on February 13-16, 1984 at the Kin Centre, Florenceville, and the Près-du-Lac Motel, Grand Falls.

The attendance at both the Florenceville and Grand Falls locations was excellent and was indicative that growers were very interested in the topics discussed. The success of this year's seminar can be attributed to the timely topics. The quality of the presentations shaped in no small measure, the tone of these meetings. The trade show exhibitors must be complimented for their continuing support and concern for the N.B. Potato Industry. On behalf of all organizations and individuals who assisted to make this year's program such an outstanding success, we extend our sincere appreciation and our congratulations.

Dr. C. E. Smith
Head, Potato Prod. Dev. Division

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OPENING REMARKS - POTATO GROWERS' SEMINAR, WICKLOW

Dr. C. E. Smith, Executive Director
Potato Div., N.B.D.A.

The year 1983-84 has been an eventful year for the potato industry. You have seen the lowest prices in the last decade and will likely see the highest before the 1983 crop has been marketed.

Your industry was faced with considerable expense and time in providing information and attending hearings conducted by the U.S. International Trade Commission and the U.S. Department of Commerce. This was an important consideration for your industry because the U.S. market is an important market as New Brunswick shipments accounted for 40% of the Canadian shipments into the U.S.A. in the last five-year period. (Table I). It is significant that your Potato Agency served you well in co-ordinating the flow of information required and in defending the industry's performance in that market.

It is also significant that the International Trade Commission found in favour of Canada in this case. The basis of the decision provides an important guideline for further action by your industry since it was determined that expansion of sales in the U.S. market grew out of a consumer preference for the Canadian product. Your product was properly graded and you provided varieties that have superior cooking quality.

I would caution the industry not to become complacent over this success and to strive for higher and higher quality and be ready to produce and market new varieties as they become available.

The Department of Agriculture has provided expanded services to your industry in the last 12 months.

The seed industry now has a modern new tissue culture laboratory to produce disease-free basic stock. The first crop of plantlets is growing in the greenhouse at Bon Accord and you are invited to visit this facility to obtain first-hand information on this project.

The tablestock and processing industry has the services of a storage management centre at Wicklow. This Centre has projects designed to fine tune the storage management practices. It also provides services to growers throughout the potato belt for monitoring the temperature and humidity in farm storages and for fry testing of product intended for processing. A fry testing station is also being provided at the Regional Centre in Grand Falls. These facilities should greatly assist the industry in improving storage management practices.

This Seminar has been arranged by our staff working in cooperation with industry representatives. On behalf of the Department, I wish you every success with your Seminar and with your endeavors in growing and marketing New Brunswick potatoes.

C. E. Smith

Table 1. Export of Table & Seed Potatoes to U.S.A. - 1978-82

Province	Total Export (cwt)	% of Total
P.E.I.	5,236,657	37.4
N.B.	5,716,550	40.8
P.Q.	497,053	3.5
Ont	947,572	6.8
Man.	1,165,926*	8.3
Alta.	336,361*	2.4
B.C.	108,656	
TOTAL	14,008,775	

*Based on Four-year Total 1979-82

Potato Div.
N.B. Dept. of Agriculture
Feb/84

OPENING REMARKS

POTATO GROWERS' SEMINAR - GRAND FALLS

Tim Andrew, Deputy Minister
N.B.D.A.

The first industry meeting at which I spoke after my appointment as Deputy Minister of Agriculture was the Potato Growers' Seminar in Grand Falls a year ago. I am now back in front of you again and in the context of the theme of "Good Management - The Key to Success". I would like to address what the Department of Agriculture has been trying to do over the last 12 months.

Whether we like it or not, we are faced with an economic environment which makes it progressively more difficult for any Government, be it provincial or federal, to respond to the requests of industry. Our ability as a Department to respond to you as Potato Industry is no exception to this rule. Over the past 12 months we have been trying to find ways of providing as much service as we can with the resources available to us. The situation has been complicated by the termination of ASA II and the lack of cost shared programming with the Government of Canada.

We are now looking forward to a new development agreement with the Government of Canada, which we hope will be in place before the end of March of this year, but even with this agreement in place, you should not expect that we will be able to provide much in the way of additional people to work with you, though we hope to have more programs available to you either from us or delivered directly by our Federal colleagues.

What does this mean to you as Potato Growers? It means that you will have to help us to provide you with those things that you need most. It means that if you want additional services in one field, you are going to have to suggest to us some other field that we can withdraw from. It means that you will have to work to strengthen your own industry structures so that more of the things that you need, you can provide to yourselves.

A good example of what you can do for yourselves has been the way that your Agency fought the battle of the potato duty with the U.S.A. The leadership that your agency showed in providing the basic information and facts needed to win that case was highly commendable. You had a good lawyer working for you out of Washington, but without the support that he got from here, he could not have won the case.

Any time now, I anticipate that the Honorable Eugene Whelan will announce that he has established Potato Inquiry that was announced in the Throne Speech. I was told last week that it is meant to happen this month or next month at the latest. There is no doubt in my mind that this inquiry may have a major impact on the future of the Eastern Canadian Potato Industry. It is my personal hope that arising out of it will be some, at least regional structure, to ensure better marketing stability for the Potato Industry of this province.

When I talked to you last year, you were staggering under the impact of disastrous price, whereas this year, thank God, you are getting a reasonable return for your crop. In dealing with the inquiry, however, don't turn your backs because the situation is alright today. Think of the future and use it as a means for providing security to prevent a repetition of the kind of marketing seasons we had in 1983.

In summary, you may expect more program money but no more people. The management of your industry will be more and more in your hands where it belongs. I wish you luck in managing it wisely.

J.T.G. Andrew
Deputy Minister
N.B. Department of Agriculture
and Rural Development

February 1984

INTRODUCTION

COLLOQUE DES PRODUCTEURS DE POMME DE TERRE

Tim Andrew, Sous-ministre, NBDA

Mon premier discours après ma nomination comme sous-ministre de l'agriculture a pris place à Grand-Sault à un colloque semblable à celui-ci il y a un an. Je suis avec vous encore une fois et le thème pour aujourd'hui est "La bonne gérance - la clef du succès."

Je désire vous informer au sujet des activites récentes du Ministère. A ce moment nous n'avons pas le choix sauf que de faire face à un environnement économique qui rend de plus en plus difficile la capacite du Governement soit fédéral ou provincial à répondre aux demandes de l'industrie. Notre capacite au Ministère de l'agriculture de répondre aux besoins de l'industrie de la pomme de terre ne fait aucunement exception à cette règle. Pendant les 12 derniers mois nous avons cherché des façons d'approvisionner le maximum de services avec les ressources qui nous sont disponiblent. La terminason de l'entente auxiliaire agricole II et le manque de programmes partagés avec le Gouvernement fédéral n'a pas aidé cette situation.

Nous prévoyons une nouvelle entente de développement avec le Gouvernement du Canada que nous espérons sera en place avant la fin mars de cette année, mais même avec cette entente vous ne devriez pas vous attendre que nous seront capable de vous offrir beaucoup en terme de ressources humaines pour travailler avec vous. En même temps nous espérons que nous aurons plus de programmes disponibles, soit de notre part ou soit livré par nos collègues fédéraux.

Quelles sont vos implications en tant que producteurs de pomme de terre? Ca veut dire que vous devrez nous aider à vous offrir les choses dont vous avez le plus grand besoin. Ca veut aussi dire que si vous cherchez des services additionnels dans un domaine, vous devrez suggérer un autre domaine dont nous pouvons vous retirer. Ca veut dire que vous devrez travailler à fortifier vos propres structures industrielles dans le but de vous approvisionner plus de choses dont vous avez besoin.

Si je peux donner un exemple de ce que vous êtes capable de faire pour vous-même; je vous donne l'exemple de la façon dans laquelle votre Agence a participée dans la bataille de l'impaôt sur l'importation de pommes de terre avec les Etats-Unis. La direction que votre Agence a démontrée en donnant l'information de basse et les faits nécessaires pour gagner ce cas, était

excellent. Les services d'un bon avocat qui travaille à Washington auraient été unitile sans l'appui qu'il a reçu d'ici, sans l'appui de votre Agence il n'aurait pu être capable de gagner le cas.

Dans un bref délai je crois que l'Honorable Eugene Whelan annouincera qu'il a établit l'enquête sur l'industrie de la pomme de terre annoncé dans le discours du Trone fédéral. J'ai été informé la semaine dernière qu'il est prévu pour ce mois ou le mois prochain. Je n'ai aucun doute que cette enquête aura un impact majeur sur l'avenir de l'industrie de la pomme de terre de l'est du Canada. J'espère personnellement qu'un des résultats de cette enquête sera au moins une structure régionale dans le but d'assurer la meilleure stabilité pour l'industrie de la pomme de terre de cette province.

L'an dernier, lorsque j'étais ici, vous étiez en train de souffrir l'impact de prix désastreux, cette année, grâce au Bon Dieu, vous recevez un prix raisonnable pour votre récolte. Néanmoins, en parlant avec l'interrogateur, je recommande que vous ne pensiez pas seulement pour aujourd'hui mias de penser aussi a l'avenir et de se servir de cet incident comme moyen de chercher une sécurité dans le but d'éviter des situations du marché comme vous avez connu en 1983.

En résumé, vous pouvez prévoir plus d'argent pour les programmes mais pas plus de personnel. La gérancede votre industrie restera de plus en plus où elle appartient, entre vos mains.

Je vous souhaite bonne chance et sage gérance.

J.T.G. Andrew
Sous-ministère
Ministre de l'agriculture et de
l'aménagement rural du N.-B.

Février 1984

FLORIDA TEST - 1983

A. Perley, Plant Pathologist
Potato Div., N. B. D. A.

Readings for the 1983 Florida Seed Potato Test were completed on January 14, 1984. A touch of frost was seen in some of the samples but the readings were not seriously affected. The results have been mailed to the producers who sent samples for testing.

The results indicate that, overall, disease readings were lower for the 1983 crop than for the 1982 crop. Levels of leafroll virus remained about the same but there was a decrease in the amount of mosaic viruses. Average disease readings for the major varieties are given below:--

	% Leafroll		% Mosaic	
Variety	1982	1983	1982	1983
Russet Burbank	0.34	0.35	5.65	2.46
Kennebec	0.26	0.13	0.01	0.02
Red Pontiac	0.02	0.01	2.58	1.93
Katahdin	0.25	0.03	0.03	0.05
Superior	0.06	0.05	3.65	1.08
Shepody	0.20	0.11	5.79	3.11

Potato producers are to be congratulated for the fine effort.

BACTERIAL RING ROT SURVEY - 1983

A total of 5913.78 hectares (14,612.75 acres) were inspected during August and September, 1983. Seven (7) producers were found to have potatoes infected with bacterial ring rot. Hectarage infected with bacterial ring rot was 28.9 ha. The Superior variety was the principal source of the infections in 1983.

INSECTICIDE SCREENING PROGRAM AT THE FREDERICTON RESEARCH STATION

1982-83

Gilles Boiteau, Agriculture Canada
Fredericton Research Station

In 1981, the Fredericton Research Station of Agriculture Canada initiated studies on the relative effectiveness of insecticides used on potatoes. This program is in line with one of the main objectives of Agriculture Canada to improve the use of agricultural chemicals. The program has three goals:

CHEMICAL CONTROL STUDIES

1. SCREENING OF REGISTERED AND NON REGISTERED CHEMICALS

2. OPTIMIZATION OF APPLICATION TECHNIQUES

3. DEVELOPMENT AND ADAPTATION OF NEW CONTROL METHODS

My presentation will consist of examples of work in progress in all three areas.

1. SCREENING OF REGISTERED AND NON REGISTERED CHEMICALS

The susceptibility of insects to chemicals is no static. It varies both in time and in location. Usually the variations are small and have no practical consequences. Sometimes though the tolerance of an insect pest can increase significantly -- Dr. Richard Parry will give you the example of the Colorado potato beetle later on. Because of these variations in time and in space, it is important to occasionally review the effectiveness of insecticides. In New Brunswick, this was last done more than a decade ago.

In 1982, four of the most commonly used sprays against aphids were field tested. Although all chemicals controlled the insects, a closer look at the results revealed interesting differences.

		M.E.[1]	A.N.	L.D.
PIRIMOR	0.42 kg	62 ab	90 a	30 bc
	0.56 kg	75 a	90 a	00 cd

Pirimor was excellent against the buckthorn aphid and good against the common potato aphid, but provided almost no control against the potato beetle. The higher rate did not improve significantly the % control.

		M.E.	A.N.	L.D.
MONITOR	1.80 L	--	43 cd	84 abc
	2.30 L	91 a	73 b	97 ab

Monitor provided an excellent control of the common potato aphid and good control of buckthorn aphids and potato beetles. There was a definite trend for better control with the higher rates.

		M.E.	A.N.	L.D.
META-SYSTOX	1.8 L	44 ab	74 b	72 abc
	2.3 L	84 a	68 b	42 bc

Meta-Systox gave a good but variable control of all the species monitored. Use of the higher rate did not improve control.

		M.E.	A.N.	L.D.
CYGON	0.7 L	63 ab	78 b	74 bc
	1.1 L	74 ab	73 b	76 abc

Cygon provided a good control of all species monitored. Here again the use of the higher rate did not improve control.

		M.E.	A.N.	L.D.
GUTHION	1.8 kg	00 c	09 c	99 a

Guthion provided no aphid control but an excellent control of potato beetles.

In another test, the same year, the effectiveness of systemic insecticides was compared. Using recommenced rates, the following % control was found based on average weekly counts:

	M.E.	A.N.	M.P.	L.D.	
				L.	A.
ALDICARB	97	99	74	100	98
DISULFOTON	97	99	34	94	98
CARBOFURAN	38	86	22	90	98
PHORATE	89	98	00	78	95

Aldicarb offered the best all around control with next in line Disulfoton and Phorate but they offered little control of green peach aphids. The use of Carbofuran should evidently be limited to the control of potato beetles.

From these results some interesting points can be made:

1. Not all insecticides are equal. Insecticides should be chosen according to the task to accomplish. For example, Pirimor should be applied only when there is an aphid problem and Guthion only when there is a potato beetle problem.

2. More of a chemical does not always mean better control. In our tests, it did for Monitor but not for Pirimor, Meta-Systox, or Guthion. Similarly, Aldicarb at a rate of 17 kg/ha is as effective as the recommended 22 kg/ha against both aphids and beetles. However, the lowest recommended rate for Disulfoton and Phorate, 17 kg/ha is satisfactory for aphids but not for beetles.

ALDICARB

Rate	M.E.	A.N.	M.P.	L.D. 1982	
17	96	99	48	99	98
22	97	99	74	100	98
28	97	89	61	100	99

PHORATE

17	91	98	00	88
24	89	99	00	78
30	93	97	00	100

The type of insecticide and its rate must be chosen according to the pests that prevail.

2. OPTIMIZATION OF APPLICATION TECHNIQUES

As you know, and as the results I have just shown reveal quite clearly, systemic insecticides are very efficient pest control tools for the potato grower. They are not without their problems though. The are extremely toxic to humans and have been known to move down to the water table in certain types of soil. In New Brunswick, tests conducted so far have not shown such problems. Still, it is sound policy to try to use them in the most efficient and safest way.

In Maine, Aldicarb must be applied at plant emergence as a top dressing. As the insecticide leaches down through the soil, it encounters the roots of the plants which start absorbing the product right away. The most popular way of applying systemic insecticides in New Brunswick seems to be in the fertilizer band. American tests done a few years ago indicated there might be some advantages in applying the systemics in the seed

furrow. Last summer tests were conducted to compare the effectiveness of the three methods. Here again, because aphids were almost entirely absent from the Fredericton area, I can only report on Colorado potato beetle control.

In the case of Aldicarb, seed furrow applications provided significantly or consistently better control of larvae and adults (Fig. 1). The topdressing provided the least control in early season but was as good as the seed furrow application in August.

In the case of Disulfoton only the seed furrow and the fertilizer band applications were compared. Like with Aldicarb, the seed furrow application provided significantly or consistently better control of larvae (Fig. 2) and adults until Aug. 2 when even the treated plots started showing significant defoliation.

3. DEVELOPMENT AND ADAPTATION OF NEW CONTROL METHODS

When, like last summer, populations of Colorado potato beetles are very high at the end of the growing season, it is recommended to apply an insecticide to destroy them. This will lower the number of overwintering beetles and should consequently decrease the number of beetles available to colonize the field next spring. Researchers in the States have found that the top killer, dinoseb, is toxic to potato beetles and could therefore be used for both purposes: that is kill the potato beetles and top kill. Our tests confirmed the value of this new control strategy.

TREATMENT	PRESPRAY -#		MORTALITY-%	
	AD	LA	AD	LA
DINOSEB	07	12	90	95
CONTROL	04	08	15	29
DINOSEB	34	--	99	--
CONTROL	29	--	10	--

[1]M.E. = Macrosiphum euphoribiae; A.N. =Aphis nasturtii; L.D. =Leptinotarsa decemlineata.

ALDICARB--POTATO BEETLE LARVAE

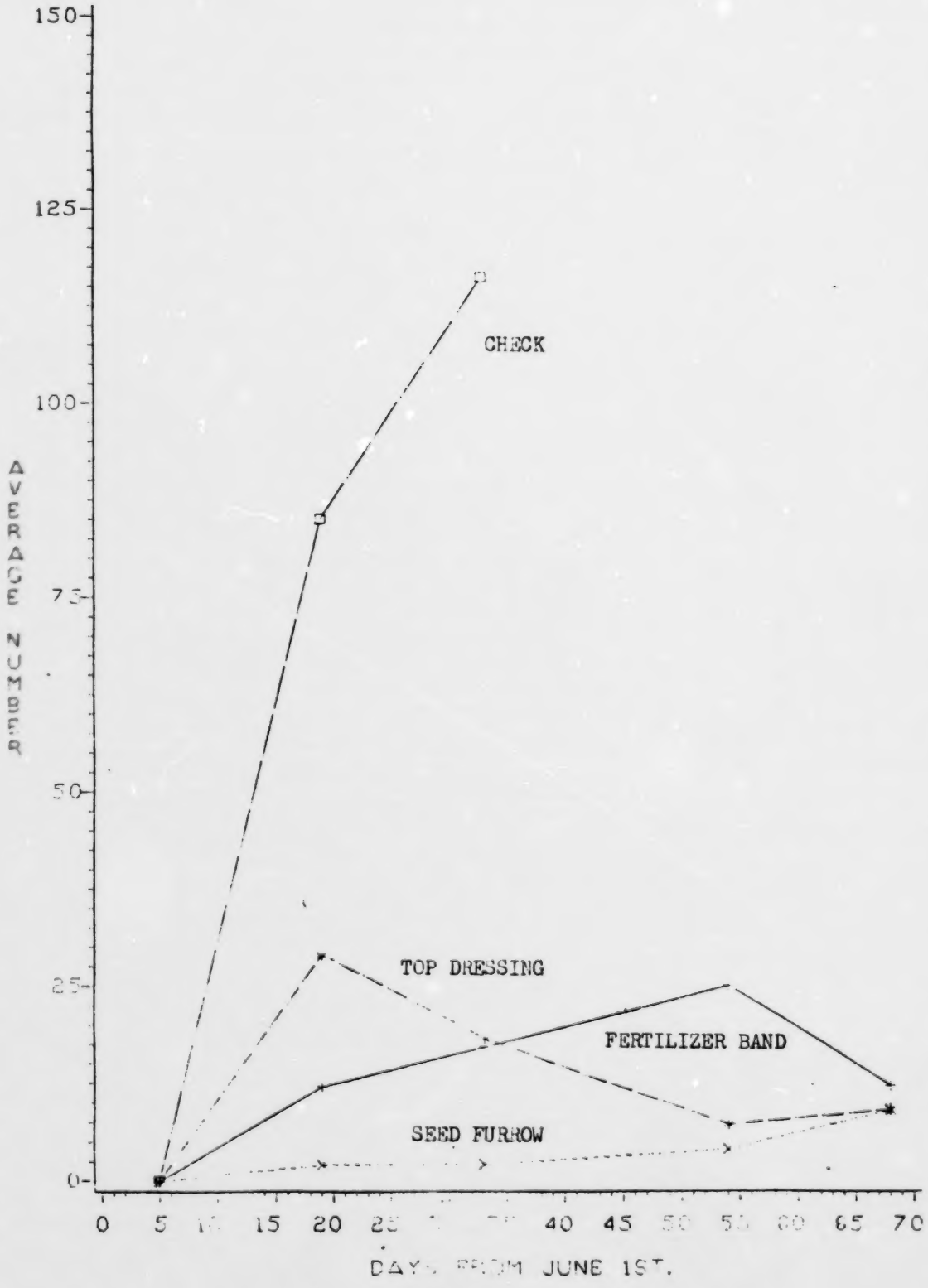


Figure I

DYSISTON--POTATO BEETLE LARVAE

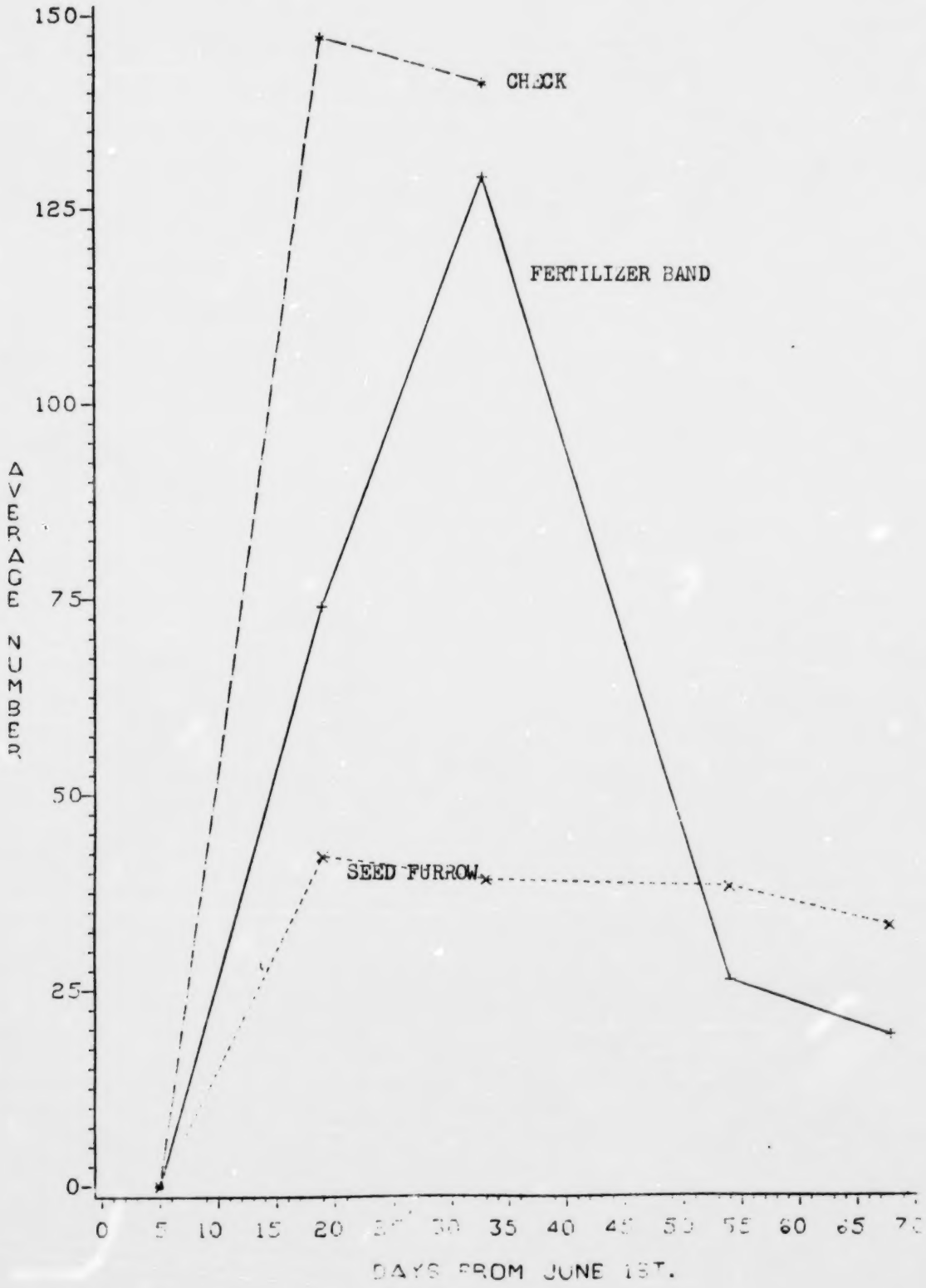


Figure 2

COLORADO POTATO BEETLE - A DEVELOPING PROBLEM IN NEW BRUNSWICK

R. H. PARRY
Potato Division, N.B. Agriculture
Wicklow

INTRODUCTION

The last few growing seasons have seen a resurgence of the Colorado Potato Beetle (CPB) in New Brunswick. We have observed, through the Pest Management (Aphid Alert) Program, a general increase in the occurrence of CPB in our potato fields during the past ten years. In fact, 1980 was a turn-around year for our beetle populations (Table 1). Previously, during the years 1974 through 1979, an average of only 18% of potato fields monitored in the Program had CPB present, and then usually in only small numbers.

Populations of CPB in New Brunswick, as in other areas, had declined to an almost insignificant level when DDT was used in the early 1950's. They remained low as DDT was replaced by cyclodiene insecticides such as Endrin in the lat 1950's and, more recently, by organophosphate (Thimet, Di-Syston, Guthion, Imidan), chlorinated hydrocarbon (Thiodan), and carbamate (Furadan, Sevin, Temik) insecticides.

In 1980, the beetles could be found in 73% of the fields inspected and their abundance was also increasing. Their occurrence remained at this level through 1982. You may recall that in 1982, there was quite a jump in their numbers in this area. This was due, in part, to the presence of a large number of volunteer potato plants resulting from a winter of heavy snow cover and a lack of frost penetration in to the ground. These volunteer plants growing in grain or pea fields generally escaped treatment with insecticides and allowed a large beetle population to develop.

During the 1983 season, 62% of monitored fields were infested, still a significantly higher level than in the 1970's. However, in 1983, growers reported having difficulty in controlling the pest with insecticides which had worked well in the past. Therefore, it appeared that resistance to insecticides may be a factor in the increasing beetle population. Indeed, resistance of CPB to insecticides has been a problem for several years in other potato-producing areas such as Long Island, N.Y. (resistance to all available insecticides except Temik), Quebec (Sherbrooke area - resistance to Furadan, Thiodan) and Maine (south and central areas).

TESTING FOR INSECTICIDE RESISTANCE IN CPB

During the 1982 growing season, Dr. Gilles Boiteau of Agriculture Canada sent a sample of Colorado potato beetle adults from potato plots at the Fredericton Research Station to the Agriculture Canada Research Centre in London, Ontario, to be screened for resistance to insecticides. The results of the tests showed no indication of developing resistance to commonly used potato insecticides; however, slight tolerances to the insecticides Furadan (carbofuran) and Belmark (fenvalerate) were detected.

During the summer of 1983, some potato growers complained of poor results in attempting to control this pest with the insecticides Furadan (carbofuran), Belmark (fenvalerate) and Thimet (phorate). In one particular field near Mapledale in Carleton County, a banded application of Thimet at planting followed by a foliar application of furadan in early July failed to provide satisfactory control of Colorado potato beetle larvae. A sample of approximately 150 adults was collected from this field in mid-August. Similar samples were collected from a potato field near Bloomfield and from plots at the Fredericton Research Station. The three samples were sent to the Research Centre in London, Ontario, where they were tested with carbofuran in the laboratory of Dr. C. R. Harris.

The results of these tests were as follows: (Table 2):

-The sample from Bloomfield showed a degree of tolerance similar to that of the 1982 Fredericton sample.

-The 1983 Fredericton sample showed a greater tolerance to carbofuran than the 1982 sample, although the recommended rate of Furadan had still controlled the beetles in the plots.

-The sample from Mapledale exhibited a high level of resistance to carbofuran, a level above the recommended application rate.

Since these results indicate the presence of Furadan-resistant beetles in at least one locality and increasing tolerance to the material in other areas, it appears that the Colorado potato beetle may be back as a major pest in New Brunswick's potato industry.

Although Belmark and Thimet seemed to give unsatisfactory control of beetles on some farms, we were unable to obtain large enough samples of beetles to include these two insecticides in the tests. We plan to test samples of beetles with these materials during the 1984 season. In addition, we will continue testing with Furadan in order to map insecticide-resistant populations of CPB.

CONTROL STRATEGIES:

In order to prevent or slow down expansion of this insecticide resistance problem, growers will have to be careful in selecting insecticides and cultural practices. For example, chemicals should be alternated from year to year. In particular, avoid Furadan, especially where it has been used for the past few seasons. The Atlantic Canada Potato Guide for 1984 lists about 12 other insecticides rated as good or excellent for CPB control.

Alternate control strategies such as the use of a parasitic fungus, the introduction of an egg parasite and the use of trap crops are being studied in various research programs. It will take time, however, for any of these methods to be fully evaluated and developed for use in commercial potato production.

A management strategy (Table 3) for the control of Colorado Potato Beetle has been developed. It will appear in the 1984 Atlantic Canada Potato Guide.

TABLE 1

OCCURENCE OF COLORADO POTATO BEETLES IN POTATO FIELDS IN NEW BRUNSWICK

YEAR	FIELDS INSPECTED	FIELDS INFESTED	% INFESTED
1974	25	0	0
1975	23	2	9
1976	28	12	43
1977	30	5	17
1978	30	4	13
1979	50	13	26
1980	51	37	73
1981	44	32	73
1982	34	25	74
1983	37	23	62

TABLE 2

DIRECT CONTACT TOXICITY OF CARBOFURAN TO ADULTS OF THE LONDON (SUSCEPTIBLE) AND NEW BRUNSWICK STRAINS OF THE COLORADO POTATO BEETLE

Insecticide	Strain	Avg. corrected % mortality at indicated % insecticide solution			
		0.001	0.01	0.1	1.0
Carbofuran	LS[1)]	0	85	100	100
	NB-82		10	100	
	NB-BL		0	90	100
	NB-FR			30	75
	NB-MD			0	15

1) LS - London (Susceptible)
NB-82 New Brunswick strain tested in 1982.
NB-BL from Bloomfield - August 17, 1983.
NB-FR from Fredericton Research Station - Field 54, 1983.
NB-MD from Mapledale near Woodstock - August 11, 15, 1983.

TABLE 3

CPB MANAGEMENT STRATEGIES

CROP STAGE	SITUATION	CONTROL
Planting	Unusually large numbers of adults in field or general area at end of previous season. Field in potatoes for three years or more.	Avoid planting potatoes in this field OR apply a systemic insecticide.*
Emergence	Adult beetles on a few plants or along edges of field.	Spot spray infested plants or field edges.*
Mid-Season	An average of two beetle larvae per plant in 12 m of row examined in different parts of the field.	Apply a recommended foliar insecticide.*
Late Season	Unusually large numbers of adult beetles.	Apply a recommended foliar insecticide* OR a vine-killer toxic to the beetles (dinoseb acid) to reduce the overwintering population.

*Because of increasing tolerance in beetle populations to some insecticides, chemicals should be rotated from season to season in order to delay the development of resistant strains.

PRODUCTION MANAGEMENT PROGRAM

Guy Bernard
Potato Production Specialist, N.B.D.A.

The Production Management Program started in the Spring of 1983. Our major goals were: First - to identify the factors on commercial operations which were the most important for producing good yields of quality potatoes; and second - to provide growers with a means of comparing their production practices and their results with those of other producers.

Nine seed growers and nine tablestock and processing producers were asked to participate in the program. The location of the farms ranged in the Province from Woodstock to Grand Falls.

In order to be able to communicate better with growers, we used microcomputers to draw field maps of each farm (Table 1). Pocket books containing these farm maps as well as a computer-produced calendar were also distributed to each grower to facilitate record keeping.

During the summer, two students were employed to monitor all the potato fields on these farms. They collected data on plant spacing, seed depth, number of misses, and they made observations on the presence of weeds, insect and diseases. They also collected information on production practices such as planting dates, fertilizer used, etc.

Reports on what the students had found in the fields were given to growers at the end of each visit. Yield samples were also collected in the Fall in 97 fields after the plants had died. Three samples of 10 to 15 feet in length were harvested in each field. Data were collected on spacing, number of stems per seed piece and number of tubers harvested. Notes were also taken on the incidence of diseases and growth anomalies. All the tubers harvested were weighed individually on a very precise electronic scale to the nearest tenth of a gram. Soil samples were also taken in each field in order to get information on the fertility status of the soils.

After the harvest was completed, we spent a great amount of time designing computer programs to analyze the information collected. Statistics and graphs such as those pictured here (Table 2) were produced for each field harvested. Several statistics are listed which are of interest to growers. There is information on the average size of the tubers, the average spacing, the average yield per acre, the average number of stems and the average set per plant. The graphs on the lower portion of the sheet represent the yields in barrels per acre, the average number of stems and the average set per plant. The

graphs on the lower portion of the sheet represent the yields in barrels per acre of the different sizes of tubers harvested - each bar represents an increment of one ounce in tuber size. By comparing the two bottom graphs, we can see that differences in yields and size distributions can be obtained from each field. A big portion of this difference is the consequence of management. We found that this kind of information was useful to growers because it provided them with a basis for comparing their results with those of other growers. It then became possible for them to identify some weaknesses as well as some strong points in their operations.

Some interesting information was gathered during last year's monitoring. We observed very important variations in seed spacing between farms, for the same variety. In fields of Russet Burbank potatoes grown for the table or processing markets for example, seed spacing varied from a low of 14" to a high of 22 1/2" between seed pieces. We were curious to know the effect of such variations in spacing on the yield and average size of tubers at harvest.

It can be seen from this slide (Table 3) that increased spacing reduced the yields that were obtained. The highest yields were obtained in fields having an average spacing between 15 and 16 inches. We did not detect any influence of spacing on the size of tubers at harvest between different fields. While it is probable that for any single field there would be an effect, it seems that there are other factors which influence the size of tubers at harvest more strongly.

On this next slide (Table 4), we can see that there is a very strong relationship between the number of stems per seed piece and the size of the tubers at harvest. It is clear from the data that as the number of stems per seed piece increases, the size of the tubers is reduced. The number of stems per seed pieces also affects the number of tubers obtained from each plant (Table 5). As the number of stems increases, more tubers are produced per plant.

The relationship between these variables is such then, that when a high number of stems per seed piece is found, the resulting crop consists of a large number of tubers of reduced size. But when the number of stems per seed piece is low, fewer tubers are harvested; but these are usually quite large.

The number of stems produced is a consequence of the physiological age of the seed piece. This physiological age in turn is affected by the temperature at which seed potatoes are kept. Since control of temperature in storages to control stem number and ultimately tuber size at harvest is possible, it would seem that growers could use this knowledge to obtain the size of tubers demanded by their markets.

Last year, we took yield samples in the fall in 38 tablestock and processing fields of Russet Burbank potatoes, the average pH for these fields was 5.8 and the range varied between pH 4.8 and pH 6.8. What was interesting was that 33% of these fields had a pH from 6.0 to 6.8. We wanted to see what effect these high pH values had on yields.

It appears from the graph (Table 6) that although poor yields can be obtained at any pH, high pH values seem to have the effect of limiting yields.

All these data are, of course, the result of only one year of monitoring and it is still too early to draw conclusions. It will be interesting, however, to see if next year's results show the same trends.

Since one of the functions of the program is to compare different production methods and to identify the best, I invite any of you who may have the intention this summer to try something different in one of your fields, to give me a call. I will be happy to monitor the crop during the summer and give you accurate yield results in the fall. I think that with this kind of experimentation and cooperation, we can all learn a great deal about growing potatoes.

Thank you.

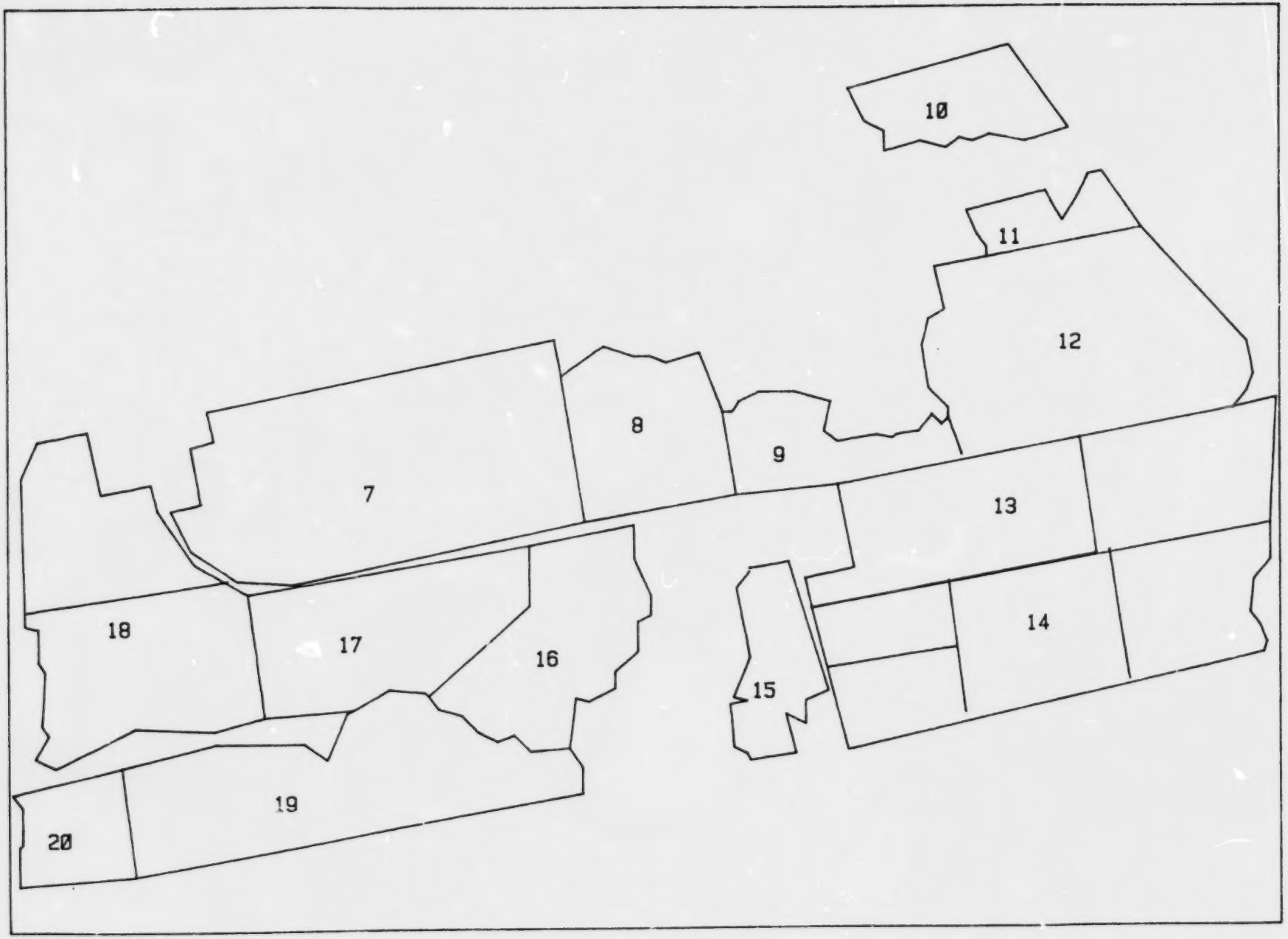


TABLE 1

TABLE 2

22 R.BURBANK

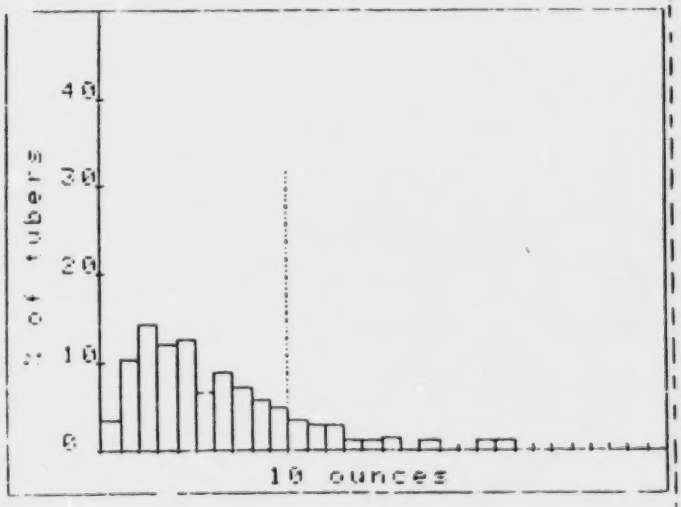
STATS

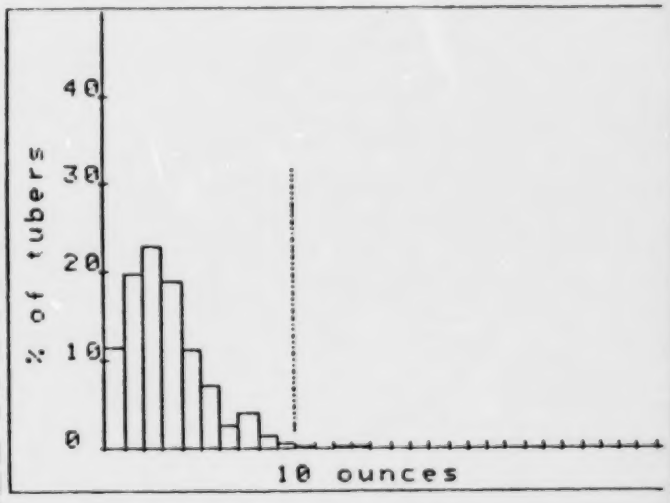
mean weight/tuber	5.94 oun.
stan. dev. for size	4.14
coef of var. for size	69.78%
av.yield	218.88 barrels/acre
av yield	2.49 lb./foot
av. space/plant	15.44 in.
stan. dev. for space	4.11
coef of var. for space	26.61%
set	8.27 tubers/plant
# of tubers/foot	6.70
av. yield/plant	3.07 lb.
av. stems/plant	2.46
stan dev. for stems	1.39
coef of var. for stems	56.56%
av. stems/foot	1.92

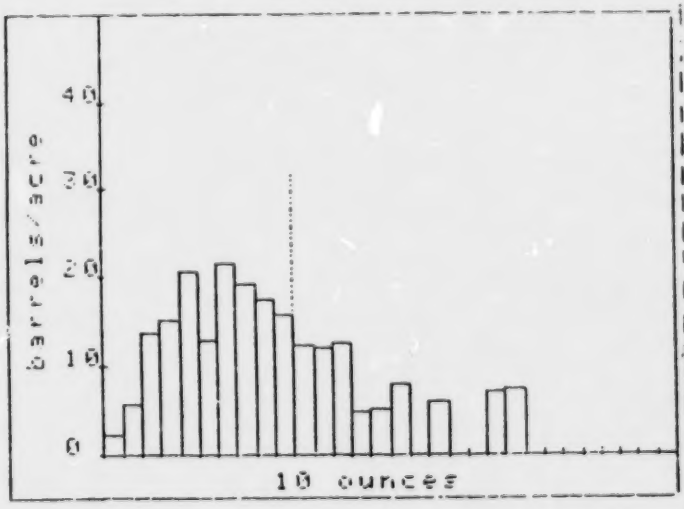
8 R.BURBANK

STATS

mean weight/tuber	3.20 oun.
stan. dev. for size	2.07
coef of var. for size	64.55%
av.yield	197.55 barrels/acre
av.yield	2.24 lb./foot
av. space/plant	21.92 in.
stan. dev. for space	5.97
coef of var. for space	27.23%
set	19.63 tubers/plant
# of tubers/foot	11.22
av. yield/plant	3.93 lb.
av. stems/plant	6.32
stan dev. for stems	3.02
coef of var. for stems	47.81%
av. stems/foot	3.48







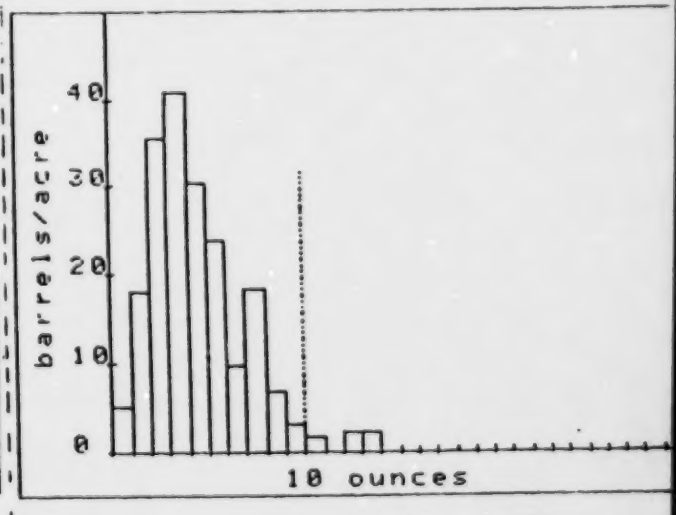


TABLE 3

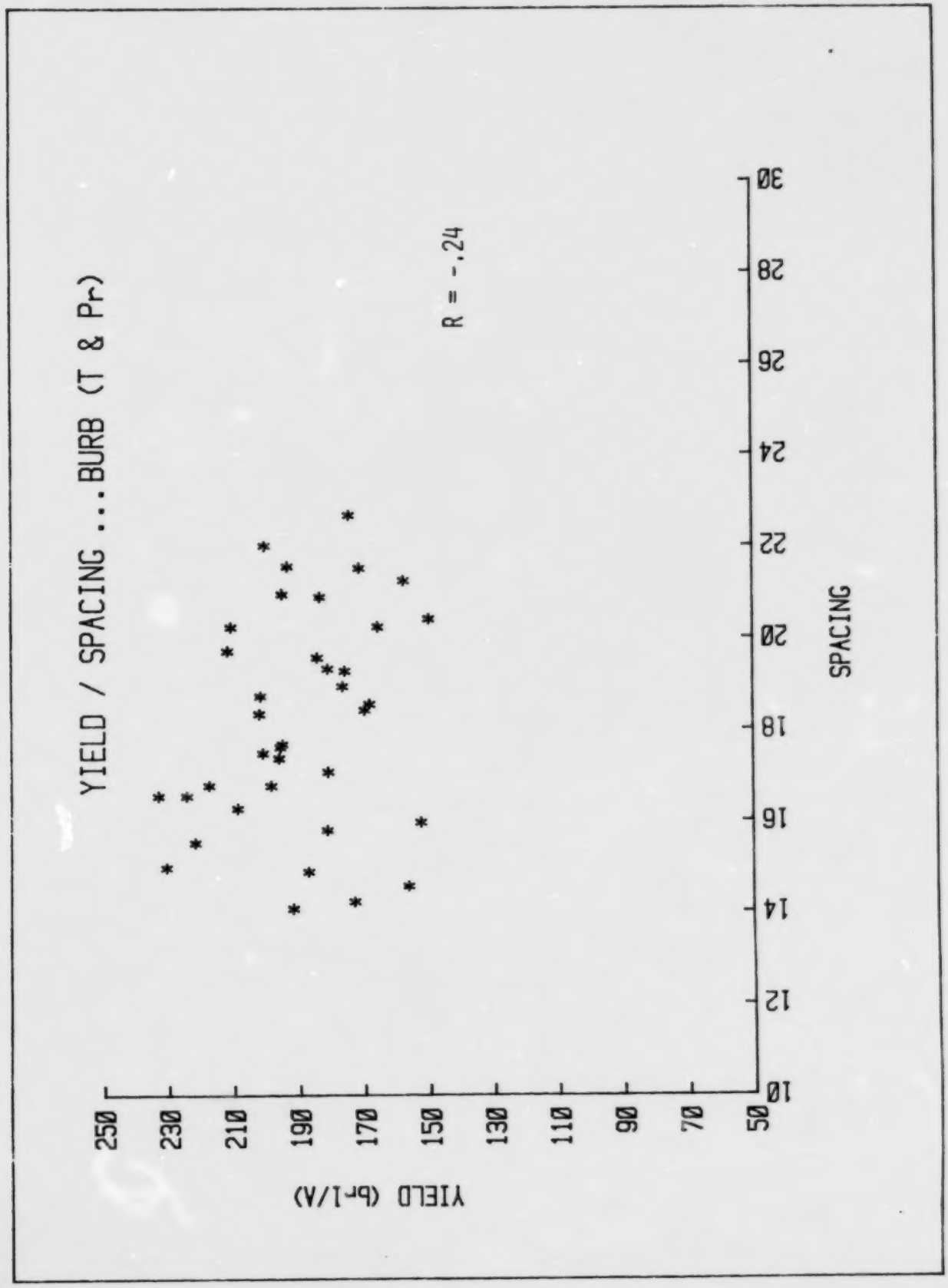

YIELD / SPACING ...BURB (T & Pr)
R = -.24
YIELD (lbs/A)
250
230
210
190
170
150
130
110
90
70
50
10
12
14
16
18
20
22
24
26
28
30
SPACING

TABLE 4

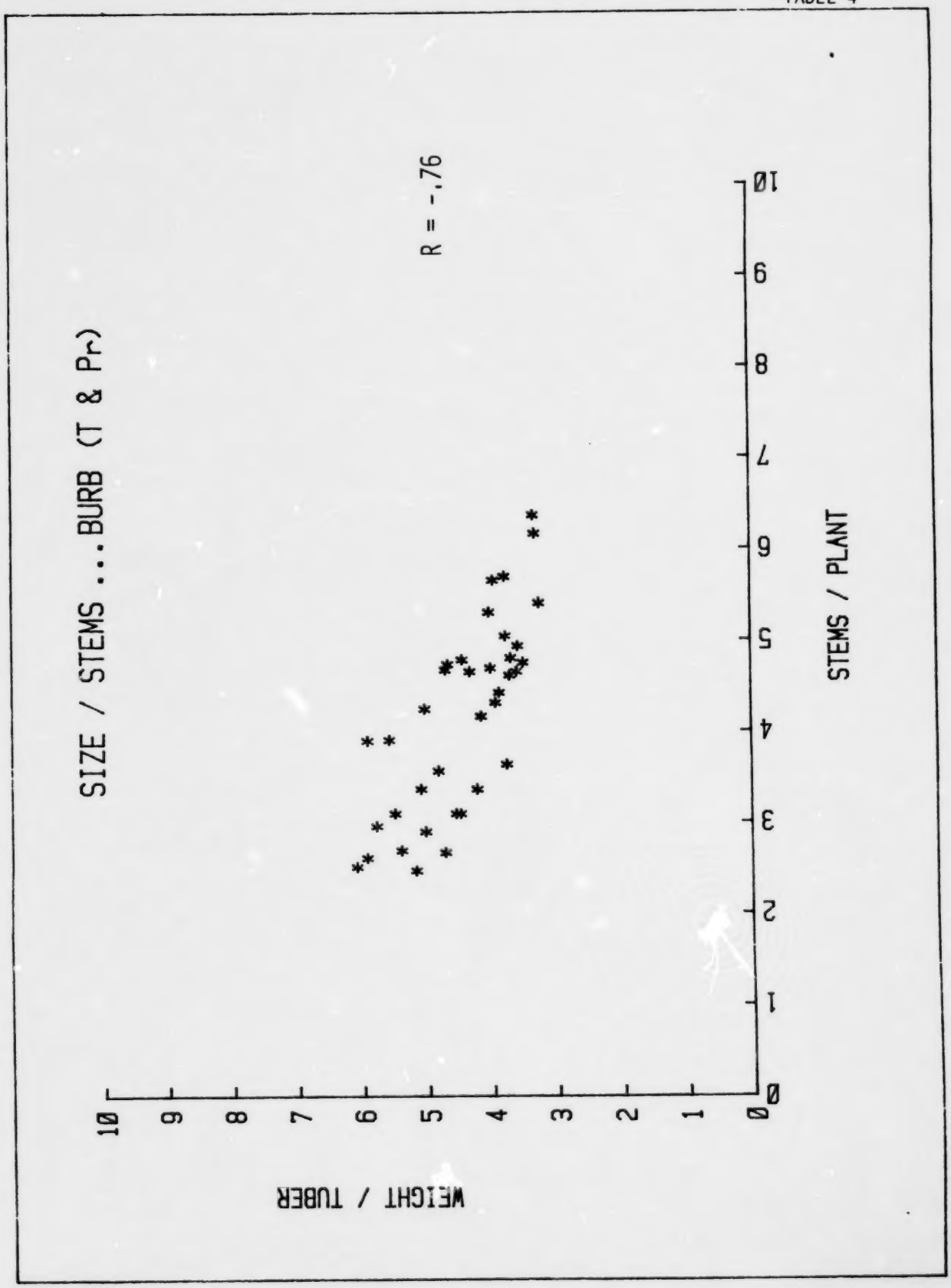

SIZE / STEMS ...BURB (T & Pr)
R = -.76
WEIGHT / TUBER
STEMS / PLANT
10
9
8
7
6
5
4
3
2
1
0
0
1
2
3
4
5
6
7
8
9
10

TABLE 5

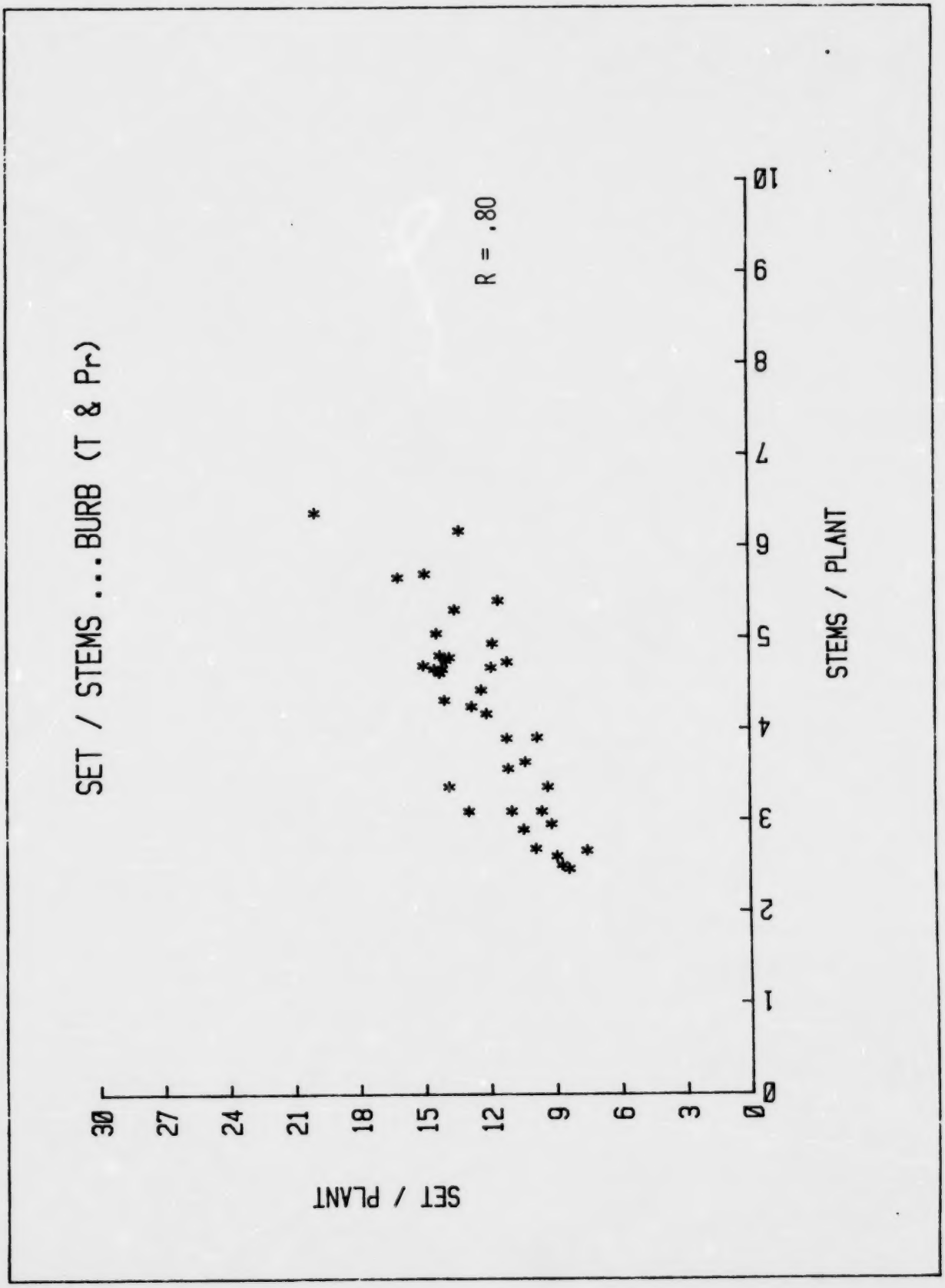

SET / STEMS ...BURB (T & Pr)
R = .80
SET / PLANT
STEMS / PLANT
30
27
24
21
18
15
12
9
6
3
0
0
1
2
3
4
5
6
7
8
9
10

TABLE 6

YIELD / pH ...BURB (T & Pr)
R = -.25
YIELD (br-1/A)
250
230
210
190
170
150
130
110
90
70
50
0
1
2
3
4
5
6
7
8
9
10
pH

LAND DEVELOPMENT/SOIL CONSERVATION

1983 FARM SURVEY RESULTS

C. Gartley, Regional Engineer
Wicklow, N.B.D.A.

The Western and Northwestern Agricultural Regions of New Brunswick have traditionally been associated with potato production since farming first began in these areas. The type and volume of land development and soil conservation carried out was largely determined by what was needed to keep pace with changes in the potato industry. For example, mechanical potato harvesters introduced in the 1960's caused many farmers to invest in land development activities such as mechanical stone picking and removing fence lines and rock piles to increase field size. These activities were necessary to improve the efficiency of operation of the harvesters and the larger tractors and cultivation equipment which were necessary to increase individual farm potato acreages.

Other land development activities such as tile drainage and land clearing were also carried out during this time. Also, soil conservation activities such as terrace and grassed waterway construction were carried out mainly in the Northwestern Region as farmers became more aware of the effects of soil erosion.

To determine how many farms have been active in land development and soil conservation and also to determine what farm needs are in these areas in the future, survey information was needed. Thus, in the fall of 1983 a land development/soil conservation survey was started by the Engineering Branch, N.B. Department of Agriculture and Rural Development.

The first part of the survey was farmer orientated. Farm calls were made to 119 farmers in the Western Regional and 114 farmers in the Northwestern Region. Emphasis was placed on potato farms due to the large number in the area and because it was felt that potato farms were most critically in need of an analysis of their land development/soil conservation activities.

A questionnaire covering farm and crop acreage, past land development activities and future needs and plans for land development work was filled out by the farmer with assistance from an employee of the Engineering Branch.

The second part of the survey consisted of collecting data on land utilization and the mapping of farm boundaries on 1:10,000 topographic maps. Approximately 34% of potato farms in the two regions producing over half the acreage of potatoes in N.B. were surveyed.

A summary of the main items of the survey results is shown in Appendix I. Survey results show that over half of the farms surveyed have carried out rock pile removal while about 40% have installed some tile drainage and over 30% have done some land clearing. Some erosion control work has been done on over half of the farm surveyed in the Northwestern Region while less than 7% of the farmers in the Western Region have carried out any erosion control projects. Other types of work such as fence line removal and ditching were carried out on less than 18% of the farms in the Western Region and 44% of the farms in the Northwestern Region. Thirty-six percent (36%) of the farms surveyed in the Western Region have not done any land development/soil conservation work while only 4% have not carried out some type of land development/soil conservation projects in the Northwestern Region. Generally it can be said that most farms have had some type of land improvement work done in recent memory. The emphasis has been on rock pile removal, tile drainage and clearing in the Western Region and on erosion control, rock pile removal, tile drainage and land clearing in the Northwestern Region.

Nearly all farmers who took part in the survey responded that they needed to do land improvement work in the future. In the Western Region 48% said they were planning tile drainage projects, 30% plan land clearing and 22% plan to start erosion control projects. In the Northwestern Region 55% are planning erosion control projects, 54% land clearing and 49% tile drainage. Most farmers said they have drainage problems (93% - Western; 72% - Northwestern) and erosion problems (82%- Western; 83% - Northwestern).

To analyze the extent of the problem of erosion, the second part of the survey was used to gather data needed to calculate annual erosion rates from individual fields on the farms that were surveyed. To date, erosion calculations have been completed on five farms in the Western Region. The five farms were chosen randomly from the 119 farms surveyed in the area. (Results of the erosion calculations are shown in Appendix II).

Erosion rate calculations were done on a field by field basis using the Universal Soil Loss Equation. The five farms chosen were located in various areas of the region and had a total cropland acreage of 590 ha (1457 acres). Three different rotations were used (potatoes-grain, potatoes-potatoes-grain, potatoes-grain-meadow). Field size on the farms varied from 1.6 ha to 36.4 ha (4-90 acres) and field slope varied from 2-15%. Slope length varied from 100 m - 1200 m (300 - 4,000 feet). In all fields up and down hill farming was used. The K factor varied from 0.20-0.28 and was chosen based on available soils information in the area.

The average calculated soil loss per farm varied from 20.7 T/ha to 36.6 T/ha (8.4 to 14.8 t/ac). The overall average for the 5 farms was calculated to be 25.9 T/ha (10.5 t/ac) which is 2.6 times the upper soil loss limit for the Region. Further analysis indicates that one-third of the cropland on the 5 farms is suffering from greater than the average soil loss for the 5 farms. Also 81.9% of the cropland is eroding at a rate greater than the acceptable soil loss limit of 10 T/ha (4 t/ac). It should be noted that almost 20% of the cropland on the 5 farms has an erosion rate of 50 T/ha (20 t/ac) which is considered to be very extreme.

Similar erosion rate calculations were carried out for 5 farms in the Northwestern Region (See Appendix II). The average annual soil loss rate per farm was calculated to be 32.6 T/ha (13.2t/ac) ranging from 19.8 T/ha (8.0t/ac) to 46.7 T/ha (18.9t/ac). The average loss for the 5 farms is 3.3 times the acceptable soil loss limit.

Erosion calculations were also carried out on a small watershed containing 178 ha (440 ac) of cropland near Perth-Andover using data from the survey. Results from the watershed calculations indicate that all but 1.6% of the cropland in that area is suffering from moderate to very severe erosion with 64.6% of the cropland in the severe to very severe erosion range.

In conclusion, the Land Development/Soil Conservation survey indicated that most farmers are concerned about and are planning to undertake land development projects. Many farmers realize they have erosion problems but are not necessarily going to start to control erosion on their farms. The survey information gathered indicates that erosion is a serious problem in the Western and Northwestern Regions and efforts must be continued to be made, especially int he Western Region to convince farmers to consider soil conservation work as a priority as well as to continue with drainage and other land development work which will result in improving and conserving their farms land base.

Clair Gartley, P.Eng.

APPENDIX I

LAND DEVELOPMENT
FARM SURVEY
1983

- SURVEYED POTATO FARMS IN WESTERN AND NORTH WESTERN REGIONS.

- SURVEY COVERED 27,000 ACRES OF POTATOES, OVER 50% OF TOTAL NEW BRUNSWICK POTATO PRODUCTION.

- CONTACTED 119 FARMERS IN WICKLOW REGION, 114 FARMERS IN GRAND FALLS REGION.

- 34% OF POTATO FARMERS IN BOTH REGIONS WERE SURVEYED.

- PURPOSE OF THE SURVEY WAS TO GATHER INFORMATION REQUIRED TO DETERMINE WHAT TYPES OF LAND DEVELOPMENT/SOIL CONSERVATION ACTIVITIES HAVE BEEN CARRIED OUT AND WHAT TYPES ARE NEEDED TO IMPROVE POTATO AND OTHER CROP PRODUCTION IN THE TWO REGIONS.

INTENSITY OF POTATO PRODUCTION

SURVEYED AREA	NO. FARMERS	TOTAL CROPLAND (ACRES)	TOTAL POTATOES (ACRES)	% POTATOES
WICKLOW AREA	119	29,433	11,792	40.1%
GRAND FALLS AREA	114	25,641	15,306	59.7%

PAST LAND DEVELOPMENT ACTIVITY

AREA	FARMERS	IMPROVEMENT WORK DONE				
		LAND CLEARING (% OF FARMERS)	ROCK PILE REMOVAL %	TILE DRAINAGE %	EROSION CONTROL %	OTHERS %
WICKLOW	119	31.1% (39/119)	56.3%	43.7%	6.7%	17.6%
GRAND FALLS	114	36.8% (42/114)	50.0%	38.6%	51.8%	43.9%

DRAINAGE PROBLEMS

AREA	NO. FARMERS	YES	NO	NO RESPONSE
WICKLOW	119	93.3%	6.7%	-
GRAND FALLS	114	71.9%	26.3%	1.8%

SOIL EROSION PROBLEMS

AREA	NO. FARMERS	YES	NO	NO RESPONSE
WICKLOW	119	82.4%	10.1%	7.5%
GRAND FALLS	114	83.3%	13.2%	3.5%

TYPE OF EROSION

		TYPE OF EROSION DECLARED BY FARMERS			
AREA	NO. FARMERS	GULLY	RILL	SHEET	NO RESPONSE
WICKLOW	119	56.3%	82.4%	27.7%	13.4%
GRAND FALLS	114	46.5%	67.5%	50.0%	17.5%

PLANNED LAND DEVELOPMENT ACTIVITY

AREA	NO. FARMERS	() % OF THE FARMERS SAID TO NEED: TILE DRAINAGE	LAND CLEARING	EROSION CONTROL	SURFACE DRAINAGE	NO RESPONSE
WICKLOW	119	47.7%	30.0%	22.3%	0%	-
GRAND FALLS	114	49.1%	53.5%	55.3%	3.5%	4.4%

APPENDIX II

WESTERN REGION

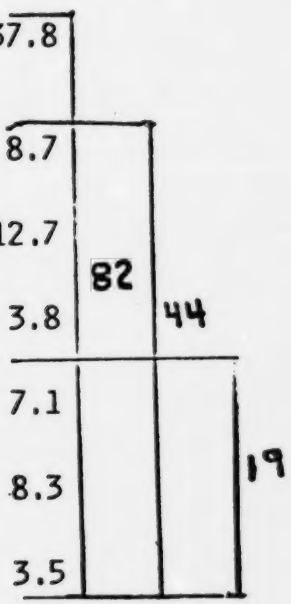
SOIL LOSS ANALYSIS

- 5 RANDOM FARMS
- 1,457 ACRES OF CROPLAND
- ROTATIONS PGR, PPGR, PGRM
- FIELD SIZE 4 - 90 ACRES
- SLOPE 2 - 15%
- SLOPE LENGTH 300 - 4,000 FEET
- UP AND DOWN HILL FARMING
- K FACTOR 0.20 - 0.28
- UNIVERSAL SOIL LOSS EQUATION

WESTERN REGION

SOIL LOSSES

EROSION RANGE	AREA	% TOTAL
0 - 4 T/AC	264	18.1
4 - 8 T/AC	550	37.8
8 - 12 T/AC	126	8.7
12 - 16 T/AC	185	12.7
16 - 20 T/AC	56	3.8
20 - 24 T/AC	104	7.1
24 - 28 T/AC	121	8.3
28 - 32 T/AC	51	3.5
TOTAL	1457 ACRES	100%



GREATER THAN AVERAGE SOIL LOSS ON OVER 1/3 CROPLAND AREA.

WESTERN REGION

SOIL LOSSES

FARM	CROP AREA	TOTAL LOSS	LOSS/ACRE
1	165	1625	10.3
2	407	3542	8.7
3	259	2499	9.6
4	279	2356	8.4
5	347	5143	14.8
TOTAL	1457 ACRES	15165 TONS	

AVERAGE ANNUAL SOIL LOSS FOR 5 SAMPLE FARMS = 10.5t/ACRE

AVERAGE ANNUAL SOIL LOSS IS HIGHER THAN RECOMMENDED = 261%

GRAND FALLS AREA - PREDICTED SOIL LOSS

FARM	CROP AREA (ACRES)	TOTAL LOSS (TONS)	LOSS/ACRE (TON/ACRE)
1	113	1150	10.2
2	290	3611	12.5
3	111	2103	18.9
4	112	900	8.0
5	286	4246	14.8
TOTAL:	912 ACRES	12010 TONS	

AVERAGE ANNUAL SOIL LOSS FOR 5 SAMPLE FARMS = 13.17 TONS/ACRE

SOIL EROSION RATES ARE 3.3 TIMES THE SOIL LOSS TOLERANCE

SPECIAL WATERSHED PROJECT - SOIL LOSS RANGE

OIL LOSS CATEGORY TON/ACRE/YEAR)	AGREAGE (ACRES)	TOTAL SOIL LOSS (TON/YEAR)
VERY SEVERE (25+)	4.6% 20.29	794.92
SEVERE (10.1 - 25)	60.0% 264.11	4296.65
MODERATE (4.1 - 10)	33.8% 148.73	875.23
SLIGHT (0 - 4)	1.6% 6.86	20.93
	TOTAL: 439.99	5987.73

AVERAGE ANNUAL SOIL LOSS FOR 5 FARMS IS 13.6 TONS/ACRE

SOIL EROSION RATES ARE 3.4 TIMES THE TOLERABLE LEVEL

EROSION CONTROL

TO REDUCE EROSION, YOU CAN USE:

- BETTER ROTATIONS
- CONTOUR FARMING
- STRIP CROPPING
- DRAINAGE
- GRASSED WATERWAYS
- DIVERSION TERRACES

START CONTROLLING EROSION

BEFORE

EROSION CONTROLS YOU!

CONSERVATION TILLAGE

R.P. Hinds, Soil Management Specialist
Potato Division, N.B.D.A.

From information compiled by the Maritime Resource Management Service (M.R.M.S.) on Canada Land Inventory, 45.5% of New Brunswick agricultural land has compacted subsoil and poor structure; 20.8% occurs on steep topography and another 5.8% is found very close to the bedrock. It is obvious therefore, that land in New Brunswick requires a high level of management inputs in order to achieve its productive potential. Improper or inadequate land management are major constraints in achieving a competitive advantage. Unfortunately, in New Brunswick good stewardship of the land base has not been a priority and soil erosion by water has become the number one problem in the potato producing areas of the Saint John River Valley. The major factors that have increased soil erosion are subjoined below:

- -Continuous production of potatoes
- -Undulating topography
- -The use of heavy equipment on wet land
- -The removal of stones from the land
- -Indifferent rotational practice and little use of cover crops at times when erosion is likely to be severe
- -Up and down the hill farming
- -Excessive tillage practices
- -Climate

Our goal now is to reduce soil erosion and keep water in the soil and one way to achieve this is through Conservation Tillage. Conservation tillage is a tillage system that reduces the number of trips over the field for land preparation and increases surface residues to protect the soil from erosion. It includes single disking, chiseling, subsoiling, ridge planting and even no-till. No-till, however, can only be used on deep fertile, well-drained soils.

TILLAGE PRACTICES

A prerequisite for any conservation tillage program requires a building up and balancing of soil nutrients and the judicious use of limestone to adjust soil pH, based on soil tests.

A normal tillage system in New Brunswick would involve at least three operations - fall moldboard plowing, spring disking, and spring harrowing. This system buries crop residues so that there is no surface mulch effect, very slow decay, may compact the soil beneath the plow, minimal ridging effect and high cost per acre. The soil is left in a highly erodible state.

By contrast, with conservation tillage, all residues from a harvesting operation including straw and chaff on sloping land must be evenly distributed over the acreage being treated. Stubble cannot be ploughed down at a time when erosion is likely to be most severe. However, the stubble may be chisel plowed or vibra-shanked with one pass across the slope in the fall. The following systems may be considered in a conservation tillage system.

-Fall vibrashank, spring vibrashank -- this provides shallow incorporation or residues for rapid decay, maximum surface mulch effect, minimal compaction, minimal ridging effect and low cost per acre. This should be used only on potato fields or clean-tilled grain fields where straw has been chopped and scattered.

-Fall disking, spring disking[1] -- this involves shallow incorporation of residues for rapid decay, good surface mulch effect, low cost per acre and can be used on all but sod fields.

-Fall chisel plow, spring vibrashank [1] -- this provides shallow incorporation of crop residues for rapid decay, good surface mulch effect, good ridging effect, minimal compaction, low cost per acre and can be used only on potato fields, or clean-tilled grain where straw has been chopped and scattered.

-Fall coulter chisel plow, spring vibrashank[1] -- this allows shallow residue incorporation for rapid decay, good surface mulch effect, good ridging effect, minimal compaction, low cost per acre and can be used on all but sod fields.

-Fall subsoiling on severely compacted ground will break up compacted layers beneath the normal tillage zone to improve percolation of water.

A conservation tillage system would also involve planting a cover crop (winter cereal) on land which was left bare in the fall.

1) Spring tillage may also be accomplished with a single pass of a soil finisher, a cultipacker, or vibrashank equipped with sweep teeth.

TYPES OF BASIC TILLAGE EQUIPMENT IN USE:

THE SUBSOILER - This consists of rigid steel shanks which do not invert the soil, but will break up compacted soil layers to a depth of 16" or more.

THE CHISEL PLOW - This implement is available in two models - the straight chisel plow and the coulter chisel plow. The basic difference in the two models is the row of coulters mounted ahead of the chisel shanks on the coulter chisel model. This implement breaks up the soil, incorporates any crop residue into the soil, forms ridges, and leaves enough crop residue on the soil surface to reduce erosion.

THE OFFSET DISC - This implement consists of large discs mounted in two rows opposing each other. Each row of discs, mounted at opposing angles, throws the soil in a different direction. This implement breaks up the soil, cuts and incorporates crop residues.

THE MOLDBOARD PLOW _ this implement which has been in use for many years, inverts the soil to form furrows, buries the crop residue and exposes the soil to erosion.

In conclusion, conservation tillage, reduces erosion, increases organic matter levels in the soil, increases infiltration and water holding capacity and places the seedbed in an acceptable state for planting the next spring.

THE HISTORY, DEVELOPMENT AND CHARACTERISTICS OF SHEPODY

T.R. Tarn and D.A. Young
Agriculture Canada

Many people have contributed to the evaluation and selection decisions that produced Shepody. It would have been more appropriate had Dr. Don Young been in the country to present the story of the breeding of this variety since he has been leader of the Potato Breeding Project during this whole period.

As is usually the case in the development of potato varieties Shepody was selected from a cross between two breeding lines. The female parent was F58050. This is a Fredericton selection. It is one of the best chippers we have seen but has a low yield and runs small. It is resistant to both Fusarium rots, Verticillium wilt and leafroll. Since its first use as a parent in 1965 it has been used in 87 crosses from which we have grown over 24,000 seedlings.

The male parent was N.Y.3. At the time of the cross it was an advanced selection in the New York breeding program and was made available to us by Dr. R. Plaisted. It went on to become Bake King. It has good appearance, high specific gravity and good appearance. The cross that produced Shepody was one of the first we made with N.Y.3 and it is interesting to note that another early cross between this parent and Norgold Russet became F68036 and eventually Acadia Russet. So farm, Bake King has been used in 17 crosses from which we have grown over 2,000 seedlings.

The cross between these two parents was made in our greenhouse at Fredericton in the spring of 1967 and it produced 1,000 seeds. Our notes record that it was made with the expectation of producing a chipping variety. The length character of Shepody is recessive to round so only a small proportion of this family would produce long tubers.

As we proceed with this story the successive stages of evaluation are identified by the number of years in evaluation and the date.

Year 1, 1986. Six hundred seeds from this cross were sown in the greenhouse at Fredericton in July under sowing number 4901. The seedlings were transplanted to one seedling per 10 cm pot and when they matured in late fall one tuber was harvested from each plant; each tuber a different genetic type.

Year 2, 1969. The 600 tubers harvested from the greenhouse were planted under their 4901 sowing number as part of some 40,000 new clones at our Breeding Substation which was then located in the Fundy National Park, Albert Co. During the summer the unusual looking plants that occur in families from breeding

crosses were discarded. At harvest time each hill (clone) was examined in the row where it was dug. Those with late tops, heavy stolons, low yields, small tubers and poor types and appearance were discarded. The rest were retained and each clone was given a second number after the sowing number. The individual we are following became 4901-4: it was the fourth picked up in this cross. Because part of this cross was used in a selection experiment we do not know the total number that survived this stage.

In succeeding years each clone is subjected to a more extensive and intensive series of evaluations and must perform acceptably to be selected to advance to the next stage. As they advance, they are also multiplied so that seed is available for all the necessary tests.

Year 3, 1970. Clone 4901-4 and the other survivors of the same cross were planted in 10-hill plots. More information was recorded this time including vigor, maturity, yield and specific gravity. The selection decisions were again made in the field at harvest time.

Year 4, 1971. At this point there were 27 survivors of the initial 600 seedlings (4.5%). They were planted in 100-hill plots for the first time and the whole plot was picked up, graded and weighed. More notes were made on the way the seedlings dug, on the type of skin, eye depth, colour and other tuber characteristics. The tubers were boiled and baked for the first time and after all the results were considered, only 6 of the 27 advanced.

Year 5, 1972. These 6 survivors of the initial 600 were again planted as 100-hill plots and were assigned a permanent clone number. 4901-4 became F69016 - F for Fredericton, 69 for the first year it was grown in the field, 016 for being the sixteenth to be numbered in this series. Six clones from 4901 received F69 numbers. During this year some disease testing was added to continuing evaluation of other traits. Only two clones advanced.

Year 6, 1973. F69016 was evaluated in Advanced Adaptation Trials in P.E.I. an N.S. as well as at the Breeding Substation. These trials provided the first test in a wider range of environments. Both F69016 and its sister clone advanced to the next stage.

This was also the first year that F69016 was French fried. To enter this test a seedling has to be long, to have a better than average size and good specific gravity. F69016 met these requirements and fried well. It continued in this test in succeeding years to ensure that it did consistently well.

Years 7-10, 1974-1977. During these years F69016 went through the Maincrop Regional Trials: four replicates of 20-hill plots grown in New Brunswick at Grand Falls and Florenceville, in Prince Edward Island at Charlottetown and in Nova Scotia at Kentville. During these trials F69016 performed consistently well. Its marketable yield over all locations averaged 90% of Kennebec and 123% of Russet Burbank. In boiling, baking and French fry tests, it continued to perform well.

Also, the disease resistance testing, commenced in year 5, was in full gear. During this time we confirmed the susceptibility to scab, late blight, mosaic and leafroll. We obtained evidence of some resistance to storage rots and seed piece decay but we did not know how F69016 would stand up in bulk handling situations. It was at the end of this period that we obtained the first evidence of resistance to net necrosis. This information came a piece at a time as collaborators at Fredericton, Charlottetown and elsewhere completed the tests and sent us the results.

Years 11, 12; 1978, 1979. In February 1978, the Atlantic Regional Potato Evaluation Committee assessed all the evaluation results at its annual meeting. The potential was there in F69016: a seedling with yield, French fry quality and a maturity advantage over Russet Burbank. How would it perform in growers' hands?

In 1978 and 1978, F69016 was grown in small commercial lots in New Brunswick and Prince Edward Island. By this time, also, it was in the variety trials run by Ken Rykbost at the McCain Research Farm. This was to be important for gaining processor acceptance of the variety and also for a series of experiments on fertilizer rates, spacing and seed types that greatly assisted the development of a management profile.

At the same time, stocks were freed of any viruses at Agriculture Canada's lab in Vancouver and virus tested stocks were entered into the seed system in New Brunswick and other provinces.

Year 13, 1980. And so we reached the point of decision. F69016 had done well in all its trials and in the grower evaluation. It appeared to have potential as a French fryer. There was no question about its quality being comparable with Russet Burbank, or its good yield potential and maturity. However, doubts remained about its storability because of a relatively short dormancy, and its moderate resistance to storage rots was being questioned. Its top type was not the best and it was thought roguing for leafroll might be difficult.

There is an element of the unknown in all licensing recommendations. In this case, any doubts of the breeders were counteracted by the strong and active interest of at least one processor and so it was that the decision was made. The Regional Committee recommended licensing in February, it was supported at the national level in March, and the license was granted 13 years after the clone was first grown.

Some of you were among those who took up the challenge at this point. Shepody has already come further than many new varieties and I believe you have still not found a problem that cannot be taken care of with appropriate management strategies. Management recommendations have been updated regularly on the basis of your experience, and several Shepody meetings sponsored by McCains have been a key to this. These management recommendations have played a key part in the acceptance of this variety. In adapting your practices to grow Shepody you have given evidence that you can help a potato succeed if you can see a clear market demand. While the Shepody acreage continues to increase and this example still before us, I hope you achieve equal successes with other new varieties for other markets.

Size, Specific Gravity and Texture

In the last part of this talk we present some new results on variation in specific gravity and texture in different parts of a tuber. The best finished product texture depends, among other things, on high solids. It is also important to have a uniform product. There are variations from variety to variety, there are also variation from part to part of one tuber. To appreciate this it is necessary to remember the internal structure of a potato tuber (Fig. 1). Dry matters are highest in the cortex on the outside and lowest in the central pith. In good French fry potatoes the pith is relatively small, but there can still be a large variation in the dry matter.

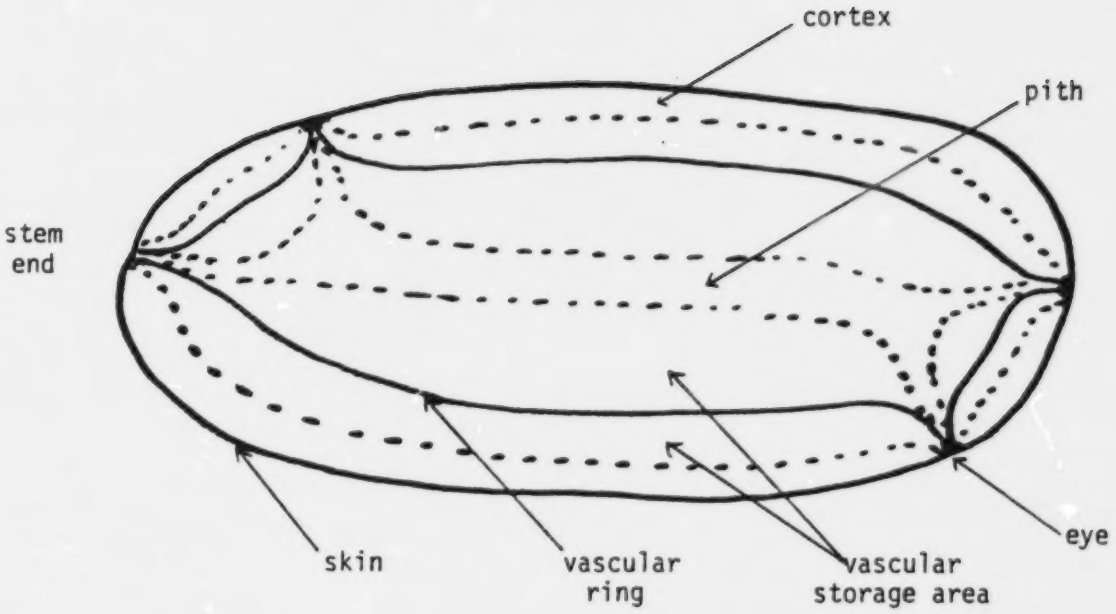


Fig. 1. Tuber structure

For this study we sampled Shepody and Russet Burbank from six growers and from Benton Ridge. We took large tubers over 14 oz. and small tubers less than 14 oz. in size. from each tuber we took slices from the outside and the inside and recorded and compared specific gravities and French fry textures as normally scored in our quality lab.

Table 1. Specific gravities

	Large Tubers		Small Tubers	
	R. Burbank	Shepody	R. Burbank	Shepody
Outside	1.100	1.093	1.100	1.092
Inside	1.075	1.065	1.080	1.074
Difference	.025	.028	.020	.018

From table 1 we see that specific gravities of outside slices are the same whatever the tuber size. We also see the specific gravities drop more from outside to inside in large tubers than in small tubers: the lowest values are obtained from the inside slices of large tubers. The pattern is similar for both varieties but the lowest values of all are from Shepody.

Table 2. French fry textures

	Large Tubers		Small Tubers	
	R. Burbank	Shepody	R. Burbank	Shepody
Outside	11.5	11.2	10.4	10.7
Inside	8.9	8.6	9.4	9.0
Difference	2.6	2.6	1.0	1.7

The French fry texture scores in Table 2 follow a similar pattern to the specific gravities. First, the best textured slices are on the outside of the large tubers. Second, the poorest textured slices are on the inside of the large tubers. This leads to the third point, that the greatest texture differences between outside and inside slices occur in the large tubers. Again, the pattern is similar for both varieties, and again the lowest values are from the inside slices of the large tubers of Shepody.

These results lead to an important change of emphasis in the Shepody Management Profile. Since internal texture decreases significantly as tuber size increases above 14 oz. management should aim to control extreme texture variations and should be for an optimum size, not a maximum size which may be in excess of 2 lb.

Additional work on nitrogen fertilizer rates by Dr. B. Sanderson at the Charlottetown Research Station also relates to specific gravity and texture. This shows that the specific gravity of Shepody will be lowered significantly if N fertilization is applied at rates greater than recommended, that is a maximum of 135 lb/A (150 kg/ha) for a full growing season and less for early harvests and seed crops.

Copies of the Shepody Management Profile - 1984 are available from the Potato Breeding Section, Agriculture Canada Research Station, P.O. Box 20280, Fredericton, N.B. E3B 4Z7 (506-452-3260).

SHEPODY

A Management Profile

This management profile supplements the general recommendations as they appear in the Atlantic Canada Potato Guide 1984.

Shepody is a recently released potato variety from Agriculture Canada with excellent french fry and tablestock potential.

Maturity

About the same as Kennebec, at least two weeks earlier than Russet Burbank. Shepody tubers can grow very large - watch seed crops carefully to prevent oversize.

Seed cutting

-there is evidence of blind seed due to low number of eyes on large seed tubers. Several growers have cut off and discarded the stem end of the largest tubers.

-the susceptibility of Shepody to seed piece decay is not well known - you may wish to treat cut seed with a recommended seed piece treatment.

Whole Seed

Excellent results have been achieved planting small whole seed. The resulting stand has been almost perfect and the increased numbers of stems per plant ensure a heavy set of moderately sized tubers.

Spacing

Cut seed for processing	-	12"-14" in N.B., 10"-12" in P.E.I.
Cut seed for seed	-	6" to 7"
Whole seed for processing	-	14"-16"
Whole seed for seed	-	8"

These suggested spacings are approximate. Shepody will usually produce a lower set than Russet Burbank with a resulting tendency to oversize. Shepody tubers over a pound are often hollow and large seed tubers tend to give blind sets and reduced stands.

Fertilizer Rates

N.B. and P.E.I.

Seed crop or late August harvest	600 lb/A	(675 kg/ha)	15-15-15
September 10 harvest	800 lb/A or less	(900 kg/ha)	15-15-15
September 20 harvest	800 lb/A	(900 kg/ha)	15-15-15
Full growing season	900 kg/ha	(1000 kg/ha)	15-15-15

Weed Control

Shepody is moderately susceptible to metribuzin (Lexone, Sencor). If metribuzin is used, follow directions carefully and do not make post-emergence applications. Damage has been reported at ground crack.

Topkill

Actively growing Shepody is difficult to topkill. Reducing fertilizer rates so that the crop is senescing at time of topkill will help. Several producers have mauled a seed crop with a rotobeater prior to topkill with good results.

Storage

Sufficient Shepody has not yet been stored long term in order for us to accurately predict its storability. It is recommended that all lots going into storage be treated with thiabendazol (Mertect).

Several lots of Shepody that went into storage during the warm weather of September 1983 suffered from breakdown caused by pink eye. Although infection with pink eye takes place in the field, disease development can continue in the storage under warm storage conditions. Present information is that Shepody is probably no more susceptible to pink eye than most other varieties. However, for a number of reasons, we will probably wish to harvest and store some lots of Shepody early in the harvest season. Examine individual tubers carefully when harvesting early, and if pink eye is found, either discontinue harvest until cool weather arrives, or place in storage binds that can be readily cooled.

Shepody tends to sprout more rapidly than Russet Burbank. Several growers who had stored Shepody in seed storages at a constant low temperature (36-38°F) report adequate sprout control. Excessive sprouting in seed lots will occur at higher temperatures.

General

Shepody is moderately susceptible to scab. Do not plant Shepody on fields known to have a scab problem. Scabby lots should be processed early in the storage season before they present a peeling problem.

Shepody may be more susceptible to rots starting in wet holes in the field than is Russet Burbank. Until we have more information, by-pass these wet spots at harvest time.

SPECIAL NOTES:

(1) Two years' data from the Charlottetown Research Station indicates that the specific gravity of Shepody will be lowered significantly if N fertilization is applied at rates greater than recommended above.

(2) Research at Fredericton has shown that as tuber size increased above 14 oz. the quality (texture) of French fries manufactured from those tubers decreased significantly.

Special care should be taken to prevent over fertilization of Shepdoy and to manage the crop so that excessive oversize does not occur.

Fredericton Research Station
January 25, 1984

Thanks to Ken Rykbost of McCain Foods, Brian Sanderson of the Charlottetown Research Station and the growers who have participated in the "Shepody Days" in Florenceville.

PERFORMANCE OF SHEPODY IN THE SEED CERTIFICATION PROGRAM IN N.B.

Ed M. Smith
District Program Officer
F.P. & I. Agriculture Canada, Fredericton, N.B.

1. Variety acceptance by seed growers

We have seen over a one hundred-fold increase in seed of the Shepody variety over the past four years in N.B. Four (4) hectares in 1980 have increased to 450 hectares in 1983. I have never seen acceptance by the industry to this degree of a new variety in my years of being associated with the potato business in N.B. However, never before has there been such a demand and a ready need as there has been for Shepody by the processing portion of the industry.

2. Virus problem with original seed stocks

The first year that several growers tried the variety, Shepody was a rather disappointing experience due to the mosaic in their crops. There were really three sources of seed the previous year; 2 from N.B. and 1 from P.E.I. One of the lots from N.B. was good for virus but the other 2 had not been top-killed sufficiently early and ended up with a rather high percentage of mosaic. However, this initial experience was beneficial to the seed growers, as they realized very quickly that Shepody was going to be a problem variety in regards to virus infection if they did not take the necessary precautions to guard against it. Several growers made an effort to rogue and clean up these original stocks but to little avail. When they replanted this stock the next year, the mosaic readings were as high or higher than before.

3. Disease susceptibilities of Shepody in relation to certifying Seed stocks

(a) Mosaic and Leaf Roll

The variety Shepody is very similar to Russet Burbank in susceptibility to these viruses. However, roguing is not as easy. Mosaic (P.V.Y.) in Shepody sometimes causes a mottle only which fades as the plant ages or begins to mature. Thusly, in bright sunny days or under breezy conditions, it becomes quite difficult to spot mosaic plants. Also with leafroll, this virus may be confused with the natural tendency of the Shepody variety to roll, especially the bottom leaves. This rolling characteristic is naturally enhanced by any condition that is causing stress to the plant. Some grower education in roguing may be necessary for this variety, so do not hesitate to ask your local seed inspector for a lesson.

(b) Scab

I believe that any grower of Shepody now realizes that this variety certainly has a weakness to scab. However, surface scab on tubers for an early contract to the processing plant does not really present a problem as the scab will be removed by the peeling process. But how many growers want to buy scabby potatoes from the grower, for planting? Very few, I expect.

Therefore, seed growers must be very aware of this point. Also, it should be noted that excess scab or rhizoctonia in seed may no longer be moved under a special certificate. This special certificate is now used only for seed lots which cannot be graded to standards due to mechanical damage, growth cracks or some defect caused by a physiological condition but not for diseased tubers.

(c) Pink Eye

Several growers experienced pink eye infection in their 1983 crop. This condition may cause storage breakdown under poor storage conditions and certainly will be a grading problem depending upon the degree of infection in the tuber. However, pink eye was especially prevalent in the 1983 crop and affected other varieties than Shepody.

(d) Thin skin

Growers quickly realize that a Shepody is not a Russet Burbank when it comes harvesting time. Shepody does have a thin skin and care must be taken to prevent an excess of mechanical damage. This factor alone can cause a great loss when the seed grower grades his stock for sale.

(d) Sprouting

The variety Shepody does have a tendency to sprout early if not kept in cool storage. Again, sprouted seed can be a problem at grading time for sale. However, the experience of several growers has been that desprouting of Shepody does not appear to affect the vigor of the seed.

The attached table shows the increase of seed of Shepody in the various classes for the years 1980-83. Also shown are the Florida test provincial averages by class for the 1983 crop.

HECTARAGE OF SEED SHEPODY IN NEW BRUNSWICK

1980 - 1983

	1980	1981	1982	1983	Florida Test Results (1983 crop)
EI	0.2	1.3	2.5	5.3	0.19
EII	0.2	0.2	8.4	17.75	0.42
EIII	3.6	SP	0.2	62.75	1.89
F	0.3	11.7	13.6	55.9	2.96
C	--	20.0	84.1	309.0	8.24
TOTALS	4.3	33.2	108.8	450.7	

SHEPODY PRODUCTION FOR PROCESSING

James Banks, Potato Grower
Florenceville, N.B.

SEED SELECTION:

1. Classification
2. Eyes, Size
3. Sprouts

LAND SELECTION

1. pH 5.3-5.7
2. Rocks, grass

PLANTING:

1. Cut by hand
2. Seed piece
3. Fertilizer
   15-15-15 - 750 lbs.
4. Gems first
5. Spacing 10 1/2 in.
   12 in.
6. Insecticide - Thimet 18 lbs.

SUMMER CARE:

1. Herbicide
2. Cultivate
3. Spray
4. Stand
   Stems per plant 3.8
5. Topkill

HARVEST:

1. Good maturity
2. Easy to bruise
3. Weather

STORAGE:

1. Mertect
2. Don't cool too quickly
3. Fusarium
4. Sprout Nip
5. High humidity

RESULTS:

	Sold/Acre	Cut	10 oz.	Color	S.G.
1982	147 bbls.	8%	24%	78% (1.2)	1.074 - 1.076
1983	134 bbls.	6%	42%	-	1.082

COMMENTS:

-Size very quickly
-40 Acres
-Good looking potato
-Good bruise-free, if mature

SHEPODY PERFORMANCE AND ITS POTENTIAL AS A FRENCH FRYER

Dr. Kenneth A. Rykbost, Agronomist
McCain Foods Ltd.
Florenceville, N.B.

I have been asked to direct my comments at the performance of Shepody and its potential as French fry variety in the province. To address the question of performance, I will summarize the results of the past six years for Russet Burbank, Kennebec and Shepody in the McCain Research Farm Variety Experiment.

Before discussing the results observed in the trial it is important to outline the manner in which the experiment is conducted and the bearing this may have on results. The experiment has been planted as early as possible each year to provide an opportunity for all varieties to achieve a reasonable degree of maturity. Planting dates have ranged from May 18 to May 24. Plots are hand planted to insure seed spacings of 16 inches for Russet Burbank and 12 inches for Kennebec and Shepdoy. Each year the trial has been topkilled about the fifth of September. This puts Russet Burbank at a slight disadvantage compared with the earlier maturing varieties. A uniform fertilizer application of 1000 lbs/acre of 15-15-15 to all varieties is a slight disadvantage for the earlier varieties, which require less fertilizer.

Table 1 shows six year averages, for the period from 1978 to 1983, for the three varieties. Parameters included are marketable yields, based on McCain contract specifications, the percentages of tubers less than two inches in diameter and three inches in length and over 10 ounces in weight, and specific gravity of the marketable crop less than 10 ounces in weight.

Table 1. Six year summary of a comparison of Russet Burbank, Kennebec and Shepody performance

Parameter	Russet Burbank	Kennebec	Shepody
Marketable Yield (cwt/acre)	239	291	290
Percent marketable	77	93	91
Percent Smalls	19	6	7
Percent 10 ounce	9	37	39
Specific Gravity	1.081	1.075	1.080

These results show a significantly higher marketable yield for Kennebec and Shepody. Most of the difference can be accounted for by a higher percentage of smalls and rough or knobby tubers in the Russet Burbank variety. Total yields have averaged 306, 313 and 319 cwt/acre for Russet Burbank, Kennebec and Shepody

respectively. Size distribution has been similar for Kennebecs and Shepody in terms of smalls and ten ounce tubers, with both varieties producing much better size for processing than Russet Burbank. The spread in size would be much smaller if the Russet Burbank was given an additional week or ten days growth by delaying topkill. The specific gravity data indicates that Shepody and Russet Burbank are better suited for French fry texture which was not one of the parameters evaluated in this trial, but is an important consideration in choice of raw material for our factories.

In addition to the information obtained from this and several other experiments Shepody has been observed closely in commercial crops for seed and processing. For a new variety we have an unusually large volume of data on its performance. Many of the unique characteristics of Shepody have been touched on by previous speakers. However, I would like to discuss cultural management of Shepody at some length because I think the future of the variety in the region will be determined by how quickly growers are able to adjust practices to maximize its potential and minimize risks.

Seed cutting will require more care than for most varieties. With low numbers of eyes and a tendency for oversize tubers a coarse seed size should be used. Instead of aiming for 1 1/2 to 2 ounces/set there will probably be an advantage to increasing size slightly to perhaps 1 3/4 to 2 1/4 ounces. On large tubers it may be necessary to discard a portion of the stem end to avoid blind sets. Shepody also tends to be a slow starter and precutting seed several days before planting may pay in earlier and more uniform emergence. Seed piece treatment with a fungicide is recommended, particularly if seed is cut several days ahead of planting.

Seed spacing will probably be determined to a large extent by availability and cost of seed in 1984. To date, processing crops have been spaced from 12 to 16 inches. My trials indicate that a 12 inch spacing is about optimum for processing crops. For seed production it will be necessary to reduce spacing to eight inches or less to avoid a high percentage of oversize tubers. When seed supplies are adequate to meet the demands I think we will be looking at optimum spacing of between six and eight inches for seed production of Shepody.

One of the problems that has shown up in French fries from Shepody is poor texture. To keep this to a minimum and to reduce the incidence of hollow heart it will be important to avoid a high percentage of tubers in excess of one pound in weight. Keeping seed spacing down to about 12 inches should help control this. Fertilizer rates will also be a factor. Excessive nitrogen has a tendency to reduce tuber set and increase tuber size.

the risk of stem end browning. A split application of topkiller will reduce the risk of stem end browning and probably result in better yields and sizing. Trials will be conducted in our program in 1984 to address this question.

Shepody has a shorter dormancy than most of the varieties grown in the region. Seed crops should be stored at 36-38°F to delay sprouting. CIPC applied to crops stored at 50°F for processing has given satisfactory control into June. Experiments with MN30 indicate that application rates should be at least 3/4 of the recommended rate and the crop should have two full weeks of vigorous growth after MH30 is applied if satisfactory control is achieved.

Several lots of Shepody in storage this winter have lost colour since the beginning of January. Only those stored at 40°F or higher are colouring at the present time. Prior to January colour was satisfactory in most lots, including some stored at 40°F. This suggests that for long term storage of Shepody temperatures will have to be maintained at 50°F or higher.

To summarize the performance of Shepody I would like to highlight its apparent strengths and weaknesses.

Strengths:

1. High yields and a high percentage of marketable tubers. Yield appears to be equivalent to that of Kennebec.
2. Early maturity. Tuber bulking occurs about two weeks earlier than for Russet Burbank. In most years a good yield of Shepody is attainable by the first week of September if the crop is planted early.
3. Excellent size and type for French fry production. Shepody should consistently produce over 30 percent 10 ounce tubers with less than five percent smalls and few off-type or rough tubers.
4. Minimum bruising. Although Shepody does not have a heavy skin, the fact that it can be harvested considerably earlier than Russet Burbank in more favourable weather and soil conditions, will result in less bruising damage than is commonly experienced with Russet Burbank. This has been substantiated in current season bruise testing.
5. Less risk of frost damage and loss of colour in field due to chilling. Earlier harvest will greatly reduce the risk of frost or chilling injury to the crop.

Weaknesses:

1. Virus susceptibility. Experience has shown that Shepody is about as susceptible to mosaic and leaf roll viruses as Russet Burbank. Seed growers will have to pay strict attention to virus controlling practices with Shepody.
2. Scab susceptibility. It may be necessary to modify liming and rotation practices to reduce the risk of scab in Shepody crops.
3. Hollow heart and texture problems. Tubers over one pound are prone to hollow heart and poor French fry texture due to low solids in the centre of these tubers. These problems can be minimized by proper seed spacing and fertilizer rates.
4. Sugar end. In 1982 moisture stress during the growing season produced fairly serious sugar end problems in a few lots of Shepody. Since 1982 was a very unusual season, it is unlikely that the sugar end problem will be seen often. It was not experienced in 1981 or 1983.
5. Pinkeye. In 1983 several fields of Shepdoy were seriously affected by Pinkeye and a bacterial soft rot breakdown in storage. However, the problem was also noted in the other commonly grown varieties. To avoid similar problems in future years, the crop should not be stored during the periods of very warm temperatures unless high ventilation capacity is available to take advantage of the short time of low temperatures during the night.

The future of Shepody as a French fry variety for the region looks very good. It is fairly safe to say that Shepody will be the major, if not the only, source of raw material for early season French fry production. It has the ability to produce respectable yields and good quality as early as the last week of August. With the possible exception of very early plant start-up with the Superior variety, Shepody will be the source of raw material from late August through the third week of September in the future.

It is also clear that Shepody will replace some of the Russet Burbank crop. To date, there does not appear to be any problems that are insurmountable in processing Shepody out of storage through December. The advantages to the grower of being able to harvest a significant portion of the crop prior to late September have been discussed by other speakers. While it may be difficult to compare the economics of growing Shepody versus Russet Burbank it is easy to see that up to 30 to 40 percent Shepody would allow a grower more flexibility in managing the harvest season to combine good yields with minimum risk of frost damage, bruising and other problems associated with late

harvest. On that basis, I see Shepody as accounting for a minimum of 40 percent of our requirements within two or three years. I believe that our experience with Shepody in the factory and growers experience with Shepody in their farming operations justify that level of optimism.

How far Shepody can go beyond the 40 percent level is a matter for speculation. There are still a lot of unknowns that must be answered before its ultimate place in the industry can be identified. Some of the problems and opportunities associated with Shepody have been discussed at length. To some extent the future of Shepody will depend on how successful growers are in rapidly adopting the practices which will allow optimum yields of high quality raw material. If you can grow crops with high solids, good texture and good size, free of scab and hollow heart and deliver the crop with good colour, we will take all the Shepody we can get. It could, conceivably replace the Russet Burbank crop entirely for processing.

A few additional factors are worthy of mention. The first one that comes to mind is market options. We all know that growing one variety as opposed to another is a decision that must be made in light of sales opportunities. To this point in time, seed supplies have been the limiting factor in determining the Shepody acreage. Seed growers have reached a point where they have to decide whether to expand their Shepody acreage, and if so which varieties they should cut back on. As an aid in making that decision the seed industry should know that there is a lot of interest in Shepody in areas beyond the Maritimes. These include Quebec, Manitoba, Ontario, Washington, Michigan, Maine and possibly Spain and Italy at the present time. In the next two or three years this list could grow. The New Brunswick seed industry is in an excellent position to dominate the Shepody seed market for at least three years. If Shepody is successful in only two or three of these markets it could mean a significant piece of business for the industry on a long term basis.

The jury is still out on the future of Shepody in the fresh market. Its excellent culinary quality offers an opportunity to find a place for it in the tablestock trade. So far the reviews are mixed. As it is neither a long Russet nor a round white, its success will depend to some extent on an imaginative marketing promotion effort. Recent signs of a revitalization of New Brunswick in this segment of the industry suggest that the timing is right to recapture lost markets. Doing so with an excellent quality boiling and baking potato such as Shepody, could make the job easier. If Shepody is accepted in the fresh market, this will provide non-seed growers with two market options and further encourage the rapid expansion of Shepody acreage.

In all of our markets we will have to be competitive. Higher yields, better quality and a higher percentage of the total crop sold would make our industry more competitive. If we can solve most of the problems that have been identified, and if the early success that Shepody has enjoyed continues, Shepody could become the major variety for processing and could also be an important crop for seed export and the fresh market.

FINANCIAL RECOVERY AND SURVIVAL FOR THE POTATO GROWER

Tom MacLellan, Potato Grower
Half Hill Farm, P.E.I.

1) Change in outlook and attitude -
Background information on self and the farm and ....
actions taken to avert total disaster

2) Not worrying about debts or feeling shame for being in debt

3) Changes that had to be made on the traditional farming practices

cut-back on labour expenses
machinery purchases
any other major capital expenditures

4) Reflections on what could have been done to reverse the financial drains on our assets

5) R E C O V E R Y

Refinanced by FARM CREDIT CORPORATION
(Little Equity left in real ownership)

SPIRITUAL and FINANCIAL help from friends
-including firms with whom we did business down through the years

B. 1. DECISION-MAKING

The pros and cons of every decision (STUDY TIME)
DECISIONS that seem good at the time may haunt you later on.
e.g. BUYING NEW EQUIPMENT (Beware of SELLERS)
EXPANDING IN THE WRONG WAYS AT THE WRONG TIME

W E C A N A L L B E I N T I M I D A T E D

FINANCIAL ADVICE

Listen to your banker - even if you don't agree with him - you are paying him - he is trained in money matters - EVEN THOUGH HE IS WORKING for the bank, he realizes for him to make money the farm has to make money. They offer agricultural specialists.

LAWYERS

Don't get caught up in all the legal jargon but learn to protect yourself; e.g. dealing in contracts, signing loans, property leases.

PERFECT EXPERTS ARE OTHER FARMERS - don't be scared to ask their advice.

C. 1. "BAD YEARS"

Low prices - how does one cope? Everyone should know their break-even point. Contract or never contract - don't play hit-and-miss.

Study the cycles

How do you cover your losses in low-price years?

YOUR EQUITY CAN COVER YOUR LOSSES FOR A FEW YEARS, HOWEVER, WE DO NOT HAVE UNLIMITED ASSETS

If you lose all your equity you end up losing everything. We are not like big corporations that have unlimited assets. If they lose money in one area, they can close out that particular section. Unlike a farmer, there is no personal identification - if he closes out a farm he is closing out a part of himself - lifestyle and possessions (land, building) that probably his father had and what he hoped his sons would continue. Therefore, we have to be careful not to let the bad years ruin us.

LEARN TO DIVERSIFY - we have expensive pieces of equipment sitting idle for most of the year;
rent out your truck or tractors
look at other sources for income

DEBT LOAD -don't make impossible commitments to the bank or other lending institutions; spread the debt over a period of time to ease the pressures, but at the same time be aware of the cost differences of ten, fifteen, twenty year loans.

D. 1. THE GOOD YEARS

High prices compared to other years - in a lot of cases the wrong comparisons are made - Financial Losses over four years cannot be wiped out by one year - it is hard to make good decisions in a high income year as it is in a low income year.

DON'T re-invest into machinery - even though it is hard to resist new equipment after you have struggled along with old stuff. But farmers are the greatest innovators of all - use that skill to your advantage.

MEET YOUR PAYMENTS but don't add extra unnecessary ones that look easy to meet that year, but won't be so easy on a poor price year.

IF THERE ARE ANY PROFITS don't re-invest them back into the farm.

BECAUSE OF HIGH PRICES everyone - banks, chemical, fertilizer, machinery and fuel companies will expect immediate payments OR new sales. DON'T LET THEM PRESSURE YOU - you need Cash Flow to operate.

CAN'T EXPECT a BONANZA YEAR to cover all your previous losses - must take a rational approach. There will always be good and bad. If the present marketing structure stays fixed, the basic law of supply and demand will dictate that the bad years will be more numerous than the good years! Therefore, be prepared to make your own spread - try to have one good year support the lesser years.

ROTATE your equipment purchases so that everything doesn't wear out at once - not forcing you to buy new pieces at the same time.
WE ARE NOT TRYING TO GET RICH BUT EASE THE BURDEN OF DEBT AND HARD WORK WITH SOME REWARD AND RELAXATION!

E. RECORD KEEPING

-Will not prevent losses if selling prices are below the cost of production.
-Has certain advantages - is a perfect measuring tool in determining how your potato operation is going.
-Can compare your costs from year to year, your yields from your crop years.
-Can determine your actual production costs per acre.
-Know your average yield, therefore you know your break-even point, therefore you know what you must get per pound before you sign any contracts or haul to the open market.
You can go over all your expenses and see if you were efficient - and maybe there were areas where money was spent but not necessary.

KEEP RECORDS SO THAT PEOPLE DO NOT TRY TO COLLECT THE SAME BILL TWICE
TOO MANY THINGS TO REMEMBER SO THINGS MUST BE WRITTEN DOWN.

E. RECORD KEEPING
VERY useful when seeking operating loans; Intermediate or long-term loans so as to make capital expenditures. Banks or other lending institutions will require this information but more important you can show yourself that there is a need for a new piece of land, building or equipment, and this new acquisition will be both practical and profitable to your potato operation.

F. "DET" (DEBT)
-without shame
-You owe a lot of money
-Farming today is a high risk business. Besides all the natural stress - weather, crop failures, labour, - husbandry of your crop, probably the worst is the financial stress.

Don't let the long term loans - ruin your day-to-day operation; try to separate the debt as an expense in running a business. All other firms and businesses have debts! The facts cannot be ignored but try to put them into their proper perspective.

G. IMPORTANCE OF PLANNING (Before Planting)

Your markets - contract versus not contracting. Go over your records; you know your break-even point
-Don't borrow money you can't afford
-Don't set up repayment terms that are impossible to meet putting too much pressure on self

SHOULD YOU EXPAND THE OPERATION??

This is where decision-making becomes important and record keeping will serve as a guide as a right or wrong thing to do.

BUT DON'T FORGET the "rule of thumb" - don't put all your profits back into operation. The projected income for the new year is only as true as the price projected and, as history shows us, that is never a sure thing.

H. THE ROLE OF FARM CREDIT CORPORATION and other lending Institutions such as banks and credit unions (provincial lending authorities)

The F.C.C. is known as the last resort. Banks are very aware of this so they are always protected - besides all loans are insured - So when banks perceive a situation getting risky, they will want you to go elsewhere, such as to Farm Credit... whose rates at the present time are higher than banks. Banks don't take their share of the

responsibilities in lending out vast amounts to the farmer. They don't realize the potential of young people in the farming business.

The Role of Farm Credit Corporation - etc.
Very little encouragement from the financial controllers. Here we are trying to continue on with the most important business in the world - THE FEEDING OF PEOPLE.

9. 1. HOW TO HANDLE THE THREAT OF BANKRUPTCY

What do you do???
-Learn to survive one way or another - keep confident in yourself and your farm
-Seek every possible way out

Only as a last resort SELL OUT, you know when you can't go on any longer - don't give up just because everyone tells you you should: tomorrow they will be buying your land equipment!!!

If you know you can't survive in the present situation, sell your farm and have some financial security rather than being forced to be left with nothing. Immense pride and fierce independence are two notable characteristics of farmers and that's why the threat of bankruptcy is so feared in the occupation of farming.

10. CONCLUSION

In staying with the theme of this POTATO GROWERS' SEMINAR - which is "GOOD MANAGEMENT - The Key to Success" reminds me of the five 'M's: Manpower, Materials, Machinery, Money, and Management. Management ties these all together.

There are five basics that are definitely used in running a potato farm and hopefully my presentation and the things I learned will help all of you in your future farming endeavours. All the people still involved in farming deserve a lot of credit because it is the only business in the world where the price in 1951 - which was $3.33 a cwt. and in the following thirty-three years, the average price has only been higher five times ... too bad our costs wouldn't follow the same schedule.

I would like to thank Mr. Richard Parry for inviting me to attend this conference, and thank you for listening.

SEED POTATO MARKETING STRATEGY FOR EASTERN NORTH AMERICA

E. Keizer, Executive Director
Marketing Division, N.B.D.A.

The Market Development study for the Eastern North American seed potato market was prepared for the New Brunswick Department of Agriculture and Rural Development and Agriculture Canada by DPA Consulting Limited of Fredericton. The study group included a steering committee with representatives of two governments, the N.B. Potato Agency, the N.B. Potato Shippers Association and the N.B. Seed Potato Growers Association.

The study was completed in July 1983. This study was undertaken to provide a market development strategy for North America.

Seed sales into the United States have increased during the last eight to ten years, with sales of the 1982 crop dropping off considerably and the '83 crop will drop off even more. However, little has been done to identify specific areas in the United States that show the greatest potential for increased growth.

The market area covered by the study involved N.S., NFLD., Quebec, Ontario and the U.S. Eastern Seaboard. Within the area, some 360,000 acres of potatoes are produced by 5,000 growers.

As a general rule you can say that the acreage planted is declining in the U.S. markets and efforts to increase local production in Quebec and Ontario are reducing the market available to out-of-province suppliers in these areas.

I was interested in the weaknesses and strengths identified in this report. These are areas the consultants felt are to our disadvantage or advantage in selling seed potatoes in North America.

First we will take a look at the weaknesses. Six were identified.

Transparency - Weaknesses

A. Lack of Florida test as condition of certification:

1) All major seed producing states in the U.S. require seed potatoes to pass certain minimum standards on post-harvest Florida tests, in addition to field standards. Canada does not have this requirement.

B. Buy American:

1) Increased nationalism of U.S. farmers and the feeling that their loyalty should be to support their fellow U.S. growers.

2) There are also similar reactions from Canadian Growers to support seed grown in their own provinces.

C. End Use Certificate:

1) It must be signed by seed users in the Unites States to certify that the seed has been planted. It may be enough to turn some of them away from Canadian seed.

D. Not well-known in U.S.:

1) Lack of knowledge about the seed program and about new Brunswick in general. New Brunswick was not the preferred seed source by any farmer interviewed. This is why promotion and contact are important.

E. Inconsistent quality:

1) Reported incidents of lower quality potatoes arriving at their destination.

F. Image in Canada is lower than P.E.I.'s:

1) In Canada, New Brunswick seed is perceived as being poorer quality than P.E.I. seed in both Quebec and Ontario.

A large number of advantages were listed for this province, however, which gives me encouragement for our expansion in the future. These include:

1. Disease standards - The standards used in the certification program are the highest in the industry. The program is a national one, the province participates in Florida testing and we back the national program up with a Potato Disease Eradication Act, within our own province.

2. Technical support - The province is the home for most of Canada's research efforts in potatoes and this encourages nigh quality standards among the province's potato growers.

3. Bon Accord Farm - This is a basic stock production centre that people are interested in visiting and its existence demonstrates a commitment to a high quality seed program.

4. Established market channels - New Brunswick growers and shippers have a long history of contacts with brokers, dealers and farmers in the United States and Eastern Canadian provinces. Expanding sales in these markets does not present the same magnitude of problems as one would have establishing a new off-shore market.

5. Good reputation in the U.S. - While our seed is not widely known in the U.S., the overall impression by those growers who have used it is favorable.

6. Varieties - New Brunswick has the leading edge on some of the emerging high potential varieties - notably Hudson and Shepody.

7. Proximity to markets - New Brunswick is closer to the Canadian and U.S. markets than P.E.I., giving both a cost advantage and the advantage of less damage en route.

8. Personal contacts - Our ability to visit and establish personal contacts is a definite advantage in Quebec and Maine. For example, the contacts which our French speaking grower-shippers have made and kept over the years, have helped to make us the most preferred source of seed amongst Quebec growers.

9. Movement toward higher quality seed - The proportion of certified seed planted in Quebec and Ontario has increased considerably over the last two years. With costs of production steadily on the rise, growers are becoming more and more conscious of the need to plant reliable seed in order to minimize risk and improve yield. This is a trend which we can capitalize on, if we organize promotional and educational efforts now.

The report made a large number of recommendations. There were three key objectives however, which will indicate to you the strategy that they were trying to get at.

The first was "TO CREATE A UNIQUE IMAGE OF HIGH QUALITY FOR NEW BRUNSWICK SEED POTATOES." This should be accomplished they suggested, by the establishment of a voluntary program with a common brand name or trademark. There would be a common set of standards for packing and grading including a guarantee of quality.

This objective required co-operation amongst a number of producer-shippers while, at the same time, remaining voluntary to each individual.

The second objective is "TO DOUBLE OUR EASTERN U.S. MARKET SHARE OVER THE NEXT FIVE YEARS."

This would be accomplished through the opening of a U.S. sales office as the means to promote the common brand and increase market share. The office would also provide marketing support to shippers, market intelligence and strong after sale follow up with growers.

The third objective is "TO INCREASE SALES IN ONTARIO BY 50 PERCENT OVER THE NEXT FIVE YEARS." This effort would involve the common brand as well combined with educational sessions in Ontario to Demonstrate to those growers the benefits from using certified seed. It would include attempts to negotiate a contract with a large grower group not presently using N.B. seed and, of course, promotional material geared specifically for the Ontario market.

As food for thought, before I close, let's speculate for a minute on how this market development effort might work. If we were to pursue option number 3, the Ontario market, for example, what would it mean.

For one thing a brand would be required for seed potatoes which could be promoted and sold by a sales office in the Ontario market.

I would see one individual, probably working out of his home, somewhere near the potato growing regions of Ontario. He would in effect be the sales office. This salesman would visit individuals, companies and co-ops, who purchase seed potatoes. We would arm him with good quality promotional literature and the seed film which the agency has already prepared for us to promote the N.B. Seed industry. He would visit the Ontario buyer again, after a delivery, and be available to help handle any customer complaints.

To fail to take such a bold step, may very well result in further loss of the Ontario market.

Some changes would have to be made, however, for such an organized sales approach to have a chance to work. For one thing, a salesman in the market cannot be peddling several brands of competing product. In fact, he should have just one. So the first big step is the formation of a group of growers or growers-shippers that would grow and pack for the one brand. It would not be necessary for all of their product to go to the common brand, but a share would have to be available.

Secondly, the supply and distribution would have to be organized back here in the province. There would have to be a system whereby one office would assemble all the potatoes sold under the single brand. This office would set the price in cooperation with the growers involved, in the market place. For this to work, growers would have to support the brand by providing product where required.

This approach would require a lot of fine tuning.

I could go on, but I expect you are getting my idea. Very simply, the consultants are suggesting more organization. They feel we require a co-operative approach involving the government, shippers, and the growers.

The consultants listed a number of opportunities. Most of them involve organization and promotion. And as you know effective promotion involves a lot of money and hard work. And "Organization" is not a popular word in this industry.

We do not have to start from zero, however, we have a film about the N.B. seed industry which has been produced by the N.B. Potato Agency. This is a very good quality promotional film and is available in English, French and Spanish.

As well, we have prepared a high class, glossy seed potato brochure which is available in three languages and is designed to complement the seed film in domestic and off-shore use.

I have tried to give you an overview of the findings of the report so that you will have an understanding of the type of recommendations it contains, even though I have not given you all the details.

Thank-You.

Le Développement du marché pour les pommes de terre de semence dans l'Est de l'Amérique du Nord

E. Keizer, Division de la commercialisation, M.A.N.-B.

L'étude sur le développement du marché pour les pommes de terre de semence dans l'Est de l'Amérique du Nord a été préparée pour le ministère de l'Agriculture et de l'Aménagement rural du Nouveau-Brunswick et Agriculture Canada par DPA Consulting Limited de Fredericton. Le group d'étude comprenait un comité de direction composé de représentants de deux gouvernements, de l'Agence de la pomme de terre du Nouveau-Brunswick, de l'Association des expéditeurs des pommes de terre du Nouveau-Brunswick et de l'Association des producteurs de pommes de terre de semence du Nouveau-Brunswick.

L'étude fut terminée en juillet 1983.

Cette étude a été entreprise afin de doter d'une stratégie de développement du marché pour l'Est de l'Amérique du Nord.

Au cours des huit ou dix dernières années, les ventes de pommes de terre de semence aux Etats-Unis ont augmenté, mais les ventes de la récolte de 1982 ont chuté considérablement et 83 ssera encore moins. Toutefois, peu d'efforts ont été déployés pour bien délimiter les régions des Etats-Unis qui présentent le plus grand potential de développement pour le marché.

La région étudiée englobe la Nouvelle-Ecosse, Terre-Neuve, le Québec, l'Ontario et la côte est des Etats-Unis. A l'intérieur de cette région, 5 000 producteurs cultivent environ 360 000 acres de champs de pommes de terre.

En règle générale, on peut dire que la superficie ensemencée rapetisse dans le marché américaine et que les efforts du Québec et de l'Ontario pour augmenter leur production locale restraint le marché dans ces zones.

Je me suis surtout penché sur les points forts et les points faibles identifiés dans ce rapport. Ce sont là des secteurs qui influent sur la vente des pommes de terre de semence en Amérique du Nord.

Regardons d'abord les points faibles, qui sont au nombre de six.

A. Epreuve de Floride non incluses dans les conditions de certification:

   1) Tous le principaux états américains producteurs de semences exigent que les pommes de terre de semence répondent à certaines normes minimale saux épreuves post-récolte de Floride ainsi qu'aux normes culturales. Le Canada n'a pas cette exigence.

B. Achat de produits américains:

1) On prévoit un plus gran nationalisme chez les agriculteurs américains. Qui estimeront devoir fair preuve de loyauté envers leurs compatriotes producteurs américains en les supportant.

C. Certificat d'utilisation finale:

1) Ce certificat peut suffire à inciter certains Américains à éviter d'acheter les semences du Canada.

D. Pas bien connues aux E.-U.:

1) Il existe un manque d'information au sujet de programme de semences et au sujet du Nouveau-Brunswick en général. Le Nouveau-Brunswick n'a pas été cité comme étant la source de semences préférées par un seul agriculteur interviewé. C'est pourquoi il est important de faire de la promotion et d'établir des contacts.

E. Qualité inconstante:

1) Il a été signalé des cas où des pommes de terre de qualité inférieure ont été expédiées.

F. Au Canada, image inférieur à celle de 1'Ile-du-Prince-Edouard:

1) Au Canada, les semences du Nouveau-Brunswick sont considérées comme étant de qualité inférieure à celle de 1'I.-P.-E. au Québec et en Ontario.

Néanmoins, un bon nombre d'avantages ont été énumérés, ce qui me rend enthousiaster face à notre expansion future. Ces avantages sont:

1. Normes relatives aux maladies - Les nomres utilizées dans le cadre du programme de certification sont les plus hautes normes de l'industrie. Le programme de certification east un programme national auquel participent les gouvernements provincial et fédéral. La province participe aux épreuves de Floride et appuie encore davantage le programme de certification par sa Loi sur l'éradication des maladies des pommes de terre.

2. Soutien technique - La province abrite la plupart des programmes de recherche du Canada sur la pomme de terre. Cela encourage la recherche et la volonté d'avoir des normes strictes de qualité de la part des producteurs de pommes de terre de la province.

3. La ferme de Bon Accord - Cette exploitation est un centre de production de stocks de semences de base que les gens sont intéressés à visiter. Son existence montre que nous sommes engagés dans un programme de semences de haute qualité.

4. Réseaux établis de commercialisation - Les producteurs et les expéditeurs du Nouveau-Brunswick on depuis longtemps des contacts avec des courtiers, des détaillants et des agriculteurs des Etats-Unis et des provinces de l'est du Canada. L'accroissement des ventes sur ces marchés ne présente pas le même degré de difficulté que l'établissement d'un nouveau marché à l'étranger.

5. Bonne réputation du produit aux Etats-Unis - Bien que nos semences ne soient pas très connues aux Etats-Unis, l'impression générale des producteurs qui les ont utilisées est favoragble.

6. Variétés - Le Nouveau-Brunswick a un certain avantage dans la productionde certaines variétés à potential élevé, notamment la Hudson et la Shepody.

7. Proximité des marchés - Le Nouveau-Brunswick est plus près des marchés canadiens et américains que ne l'est l'Ile-du-Prince-Edouard, ce qui nous donne deux avantages: un prix moins élevé et des dommages moindres dus au transport.

8. Contacts personnels - La possibilité que nous avons de nous rendre nous-mèmes sur les lieux et d'établir des contacts personnels au Québec et au Maine sont un avantage certain. Par exemple, les contacts qu'ont établis et maintenus des producteurs-expéditeurs francophones ont contribué à faire de nous la source de semences préférée des producteurs québécois.

9. Adoption de semences de meilleur qualité - La proportion de semences certifiées plantées au Québec et en Ontario a considérablement augmenté au cours des deux ernières années. A cause des coûts de productionconstamment à la hausse, le producteurs prennent de plus en plus conscience du besoin de planter de bonnes semences afin de minimixer les risques et d'améliorer les rendements. C'est là une tendance que nous pouvons intensifier si nous faisons des efforts de promotion et de sensibilisation.

Le rapport fait de nombreuses recommandations. Trois objectifs principaux cependant exposent la stratégie proposée.

Le premier de ces objectifs est de "**créer ne nouvelle image de haute qualité pour les pommes de terre de semence du Nouveau-Brunswick.**" Les experts-conseils suggèrent de réaliser cet objectif par la création d'un programme volontaire comportant les caractéristiques suivantes: une marque commune; une série de normes pour l'emballage et le classement, y compris une garantie de qualité.

Cela nécessite la collaboration d'un certain nombre de producteurs-expéditeurs, mais les efforts doivent demeurer volontaires pour chacun.

Le deuxième objectif consiste à "**doubler la part du marché au cours des cinq prochaines années.**"

Ceci peut être fait en ouvrant un bureau de ventes aux E.-U. pour promouvoir la marque commune choisie et augmenter la part du marché. Ce bureau fournirait aussi des services de soutien du marché aux expéditeurs, des informations sur le marché et assurerait un suivi efficace après-vente auprès des producteurs.

Le troisième objectif est "**d'augmenter les ventes en Ontario de 50% au cours des cinq prochaines années.**" Cet effort, parallèlement à la promotion de la marque commune précédemment mentionée, nécessiterait des séances éducatives afin de démontrer aux producteurs ontariens les avantages à utiliser des semences certifiées. If faudrait aussi tenter de négocier un contrat avec un gros groupe de producteurs qui n'achètent actuellement pas des semences du Nouveau-Brunswick, et bien sûr, de préparer du matériel de promotion destiné spécialement au marché de l'Ontario.

Avant de terminer, réfléchissons ensemble sur la façon de concrétiser cet effort de développement. Si nous devrions suivre l'objectif 3 de développer le marché ontario, qu'est-ce que cela impliquerait?

Il faudrait avant tout adopter une marque de pommes de terre de semence qui pourrait être commercialisée et vendue par un bureau de représenteation régionale en Ontario.

Je verrais comme possibilité qu'un représentant des ventes peut travailler probablement à son domicile, quelque part dans les régions productrices de l'Ontario. Il pourrait faire des démarches aurpès des producteurs, des sociétés et des coopératives qui achètent des pommes de terre de semence. Nous pourrions lui fournir des instruments de promotion de bonne qualité, c'est-à-dire les prospectus et le film sur les semences que l'agence a déjà préparés pour nous aux fins de promotion de l'industrie des semences du Nouveau-Brusnwick. Il renderait visite aux acheteurs de l'Ontario, puis retournerait les voir après une livraison du produit afin de pouvoir répondre à leurs questions et de régler toute plainte qui pourrait survenir.

A moins de prendre une mesure aussi énergique, il en résultera inévitablement une perte encore plus marquée du marché ontarien.

Il faudrait apporter certains changements, toutefois, pour qu'une telle approche commerciale organizée ait une chance de réussir. Premièrement, un vendeur ne puet offrir sur le marché diverses marque de produits concurrents -- en fait, il ne devrait en annoncer qu'une seule. Ainsi donc, la première étape importante à franchir consiste à former un groupe de producteurs ou de producteurs-expéditeurs qui ne feraient que de la culture et de l'emballage que pour une seule marque. Il ne serait pas nécessaire que tous leurs produits soient identifiés par cette marque commune, mais certainement une partie de leur production.

Ensuite, il importerait d'organiser le réseau d'approvisionnement et de distribution ici même dans la province. On pourrait prévoir un système selon lequel un bureau s'occuperait de rassembler toutes les pommes de terre vendues sous une même marque. Il verrait aussi à fixer les prix en concurrence avec les producteurs. POur obtenir un tel résultat, les producteurs auraient à approvisionner le marché lorsque le besoin s'en ferait sentir.

Il rest encour beaucoup de détails à régler avant d'établir une telle approche.

Je pourrais m'étendre encore longtemps sur ce sujet, mais je crois que vous avez compris mon idée. En termes simples, les experts-conseils nous suggèrent de mieux nous organizer. Ils pensent que nous avons besoin d'une approche coopérative qui obtiendrait la participation du gouvernment, des expéditeurs et des producteurs.

Les experts-conseils ont dressé une liste des possibilités d'accroisement de nos ventes sur les marchés dont nous parlons. La plupart de ces possibilités exigent un effor d'organization et de promotion et comme vous le savez, une promotion efficace demande beaucoup d'argent et de travail.

Cependant, nous n'avons pas besoin de commencer à zéro car il existe déjà un film sur l'industrie de la pomme de terre de semence du Nouveau-Brunswick produit par l'Agence de la pomme de terre du Nouveau-Brunswick. Il s'agit d'un film de promotion de qualité disponible en anglais, en français et en espagnol.

Aussi, nous avons préparé une très belle brochure à couverture glacée sur la pomme de terre de sem;ence qui est aussi publiée en trois langues. Cette brochure est conçue pour compléter le film lorsqu'il sera présenté au pays tout comme à l'étranger.

J'ai tenté de vous donner un résumé des résultats du rapport pour que vous puissiez comprendre le genre de recommendations qu'il contient, même si je ne vous ais pas exposé tous les détails.

Merci.

TASK FORCE ON POTATO UTILIZATION

"UPDATE"

Mike Routledge, Associate Director
Potato Division, N.B.D.A.

I have been asked to update you on the activities of the Task Force on Potato Utilization and perhaps present some insight on what direction we might be headed in dealing with the perennial problems of off-grade or non-marketable potatoes.

The Task Force was established in March, 1982 by the N.B. Department of Agriculture to develop a policy for the disposal of unsaleable potatoes. The Force was made up of a wide cross-section of representatives from various industry groups and government departments. At the first meeting it established as its purpose, "to examine ways of maximizing the production of marketable potatoes and option for utilization of off-grade and surplus stocks."

From the outside, it appears as though the Task Force hasn't been very active or accomplished very much. From the inside, it appears the same way. The disposition of off-grade or so-called "cull" potatoes is a problem that generates very little enthusiasm and in fact develops considerable frustration among those people involved. I will say, however, when the potatoes start piling up in very exposed locations, many people can get quite interested and involved.

The Task Force has estimated that normal cullage or grade-out is in the area of 1.5 million cwt. which is approximately 20% of the crop. These figures do not take into account the off-grade potatoes that are received in regular shipments to the processors, which could add another 1 million cwt. plus to the cull pile. The processors, however, have been able to divert most of the off-grade to other uses from their major activity which is French fry production.

You can see from these figures that we are dealing with a very significant volume of product, product which requires similar production inputs. Yes, it costs money to produce culls.

It would appear that we are faced with two tasks: --

1. Reduce the total volume of culls produced or, to put it in a more positive light, increase our yield of marketable tubers. But we must keep in mind the need for higher grade-out in many of our present table packs. I believe we can improve marketable yield through better land management and cropping practices and through better harvesting and storage management.

2. Find more and better uses for the so-called off-grade potatoes. It is this second task I would like to discuss in more detail. In a 1983 survey of Potato Shippers initiated by the Task Force and carried out by the Market Development Branch of the Department, it was determined what was in the cull piles for the two years 1981-82 and 1982-83. A total of 53 questionnaires were mailed out to shippers and 39 were returned for a response rate of 75%. It is worth pointing out that all the larger packers responded.

A preliminary look at the results gives us a good idea of the major factors affecting grade-out. This can be seen in the following breakdown: --

	1981-82 (%)	1982-83 (%)
Smalls	42.3	29.8
Mechanical Injury	15.7	12.2
Misshapen	14.7	27.7
Rough	11.2	16.8
	83.9	86.5

The high percentage of smalls is something that we need to be concerned about and the Task Force has been giving some attention to this problem. There are markets for smalls (both table and processing) and it will be necessary to explore these in more detail. If we are unable to utilize the smalls, then let's look seriously at adjusting the potato harvester so that fewer arrive at the storage. If we are not going to use them;, it doesn't make much sense to pay good dollars to store them and later dispose of them.

From the survey we can also see what happened to the grade-out: --

	1981-82 (%)	1982-83 (%)
Livestock Feed	54	49
Dumped	39	42
Returned to Grower	7	8
Other	0	1
	100%	100%

This would indicate that approximately 50% of the present grade-out is going for livestock feed. It is noted also that nine shippers out of the 39 reporting disposed of all their off-grade to livestock feed.

The Livestock Feeding Option

The Task Force has given considerable attention to the livestock feeding option and under current economic conditions this appears to offer the most potential. As indicated above, a major portion of off-grade is now going for livestock feed.

During the past winter a feeding trial was conducted under the A.S.A. II Technology Transfer Program to demonstrate that potatoes can be fed satisfactorily under cold weather conditions. The trial was conducted in co-operation with a small feedlot operator in Bath by Dr. J.W.G. Nicholson, Senior Scientist, Fredericton Research Station, and Murray Snoddon, Nutritionist with N. B. Agriculture. The mild open winter did not present the most ideal conditions for conducting such a trial and there was a problem with the final weighing because of a malfunction in the scales. As a result, the data was not as reliable as we would have liked.

A total of 44 head were divided into three equal lots by weight. All animals were fed good quality hay (9.5 - 10 % protein) and a protein-mineral supplement at the rate of 2 lb. per head per day. In addition, Pen I received 5% of their body weight in potatoes; Penn II received 1% of body weight in grain; Pen III received 25% of their body weight in potatoes and 20% as much grain . Based on total gain, there was no significant difference between the three lots.

The trial is being repeated again this year and hopefully we will be able to demonstrate the advantages of feeding potatoes under winter conditions even though many producers are already committed.

A project under the direction of the Department was carried out last winter to promote the use of potatoes as livestock feed. Two very successful information meetings for livestock feeders were held in Wicklow and Perth-Andover and a Nutrition Newsletter on Feeding Cull Potatoes to livestock was circulated to producers and feed industry personnel.

Potatoes are a nutritious feed and offer some advantages to the cattleman in trying to reduce feed costs without sacrificing performance and yield. There are also some disadvantages and this is what concerns the Task Force at this time.

I would like to present some of these disadvantages in the form of needs: --

1. We need to determine the level of potatoes that can be fed in a cold environment without reducing performance and we need to determine if any reduced performance is offset by savings in feed costs. This will require a number of on-farm trials and a start has been made as indicated earlier.

2. Cattlemen interested in feeding potatoes must be assured of a consistent supply. We need to educate the packers and shippers of this fact and we need to develop a distribution and/or storage system that will facilitate the movement of potatoes to feeders on a regular, consistent basis. The recent introduction of central wash plants which are packing on a fairly regular basis will help alleviate this problem to some extent.

3. Choking is a real concern for some cattlemen. We need to stress proper management to reduce choking, particularly in situations where cattle are group fed. At least two companies in the Province are prepared to build potato pulpers for operation by electric motor or power take-off. There may also be need to advise livestock owners on the design and construction of feeders (feed bunks) to minimize choking.

4. Rocks are a "no-no". They can be harmful to cattle, hard on pulpers and mixers and have to be manually removed from the feed bunk. We need to improve or develop processes for removing corks and we need to impress on packing plant operators the harmful effects of rock and also excessive soil in culls designated for livestock feed.

5. We need to encourage potato growers and their neighbours to raise more cattle (beef cattle) in the potato growing areas, particularly in the northern part of the potato belt. This could accomplish a number of things for the benefit of the potato grower:

    1) permit diversification by adding another farm enterprise;
    2) more crop rotation to improve soils and reduce erosion;
    3) better outlet for off-grade potatoes.

This may require an incentive policy to encourage the establishment of small feedlots (100-300 head) in the potato belt.

We are presently preparing a draft report on livestock feeding options for consideration by the Task Force prior to making recommendations to both the industry and the Department.

Starch Option

The utilization of offgrade and surplus potatoes for starch production has been given some attention and is one option that generates considerable support in the Grand Falls area. About one year ago the Pirie Potato Company, Grand Falls, submitted a proposal to the N.B. Department of Agriculture that would utilize up to 500,000 cwt. of potatoes for starch. They identified two major constraints: 1) water supply and 2) lack of demand for starch. This proposal would in effect have required the Department to cover production and inventory costs of 2100 tons of starch. The proposal was turned down because of the high cost and the poor market for the product at that time.

As with the livestock feeding option, the inconsistent supply of potatoes is a real problem in trying to develop or maintain a viable starch industry. This problem not only causes difficulty in operating a plant at a reasonable level of capacity, it also causes a problem in assuring the trade that we can supply starch on a regular and consistent basis.

In a review of various disposal options carried out by the Research and Productivity Council (RPC) in April-May, 1983, they could not demonstrate that starch production is a feasible operation without a flexible secondary disposal option.

The variability of the supply from year to year and from month to month in any one year demands flexibility in disposal choices. The best secondary choice at the moment would be as livestock feed which also depends on a consistent supply.

RPC did recommend that a further study be carried out to determine the feasibility of upgrading and modernizing the present plant in Grand Falls and to consider the establishment of a series of mini-starch plants throughout the potato belt. This is a relatively new concept. This study is just getting underway.

Dehydrated Potatoes and Food Aid

One option which could have a significant impact is the production of granulars or flakes for Food Aid. We do have the capacity in the Province to produce a greater volume of these products but currently do not have the necessary markets. The Canadian International Development Agency (CIDA) last March did contract for approximately 880 tonnes of granulars but were limited by budget constraints. Efforts are needed to encourage CIDA and other Federal Government agencies to direct a larger portion of Food Air dollars for dehydrated potatoes.

Dumping

This is a non-option but as long as we have potatoes around for which we do not have a better use, it will be necessary to dump or bury them. Many proposals and suggestions have been battered around supporting the development of potato dump sites on a permanent basis but the lack of funds is a major constraint. There are two schools of thought - one that government should not be putting up scarce dollars to bury potatoes and the other that it is a public responsibility to dispose of our offgrade and surplus potatoes.

Last spring funds were made available under the Family Farm Improvement Program to assist growers in establishing on-farm disposal sites. This program paid 50% of the hourly rental rate for approved earth moving equipment to a maximum of $250.00 per applicant. Approximately 190 applications were approved involving funds in excess of $45,000.00. This was a one-shot effort to deal with a special situation.

A suggestion that has come forward is one that would have a section of the municipal dumps designated for potato disposal only. The special areas could be covered (buried) in the spring and producers within the area would be obliged to use these sites. This appears to be a very reasonable alternative in those areas where there is concentration of potato production. We will need to explore this option with the Departments of Transportation and Environment.

The Task Force is aware of the serious problems caused by large volumes of unusable potatoes and is anxious to reach a solution that can address the concerns of the various groups involved.

In summary, I would say that any program or programs we may devise to resolve the problem of off-grade and/or surplus potatoes will need to be fairly flexible.

Livestock feeding appears to be the best option at this time. Starch production does offer some potential if we can use new technologies to refine the process and secure markets for the finished products. The production of dehydrated products will continue to play a significant role but any expansion will depend on new markets and/or Food Aid thrusts.

The bottom line is dumping. If we can't find new uses for offgrade or surplus potatoes, then we may be obliged to continue dumping.

The Task Force on Potato Utilization would like to see the problem go away. In the meantime we will be putting together some guidelines and recommendations for the consideration of the industry and the Department.

R.E.M. Routledge

THE SAINT JOHN VALLEY BRAND

Margaret Routledge, Promotion Consultant
Market Development Branch, N.B.D.A.

Mr. Chairman, Laides and Gentlemen of the N. B. Potato Industry:

I am pleased to be a part of your potato growers seminar and trade show and to be able to give you an outline of the history, objectives, marketing promotion and future development of the Saint John Valley Brand of pototoes.

Gary Hatfield is here to share this part of the program with me and he will talk to you about the distribution of the brand.

We will reserve a few minutes at the end of our presentations for any questions that you may wish to ask.

The idea (that bulb that lights up in someone's head - usually in the comics) for this brand of potatoes came form the Potato Leader Committee and was passed on to the Market Development Branch, N.B. Agriculture "for appropriate action."

I personally became involved through my job as promotion consultant for N.B. potatoes.

On August 15, 1983, I presented a proposal to the N.B. Potato Shippers Association which outlined the objectives and marketing strategy for a new brand of potatoes. The shippers appointed a committee and meetings were held to determine the specifications, bag design, rules, etc. When the packing contracts were completed, copies were sent to all members of the Shippers' Association but only six shippers initially contracted to pack the brand. All of this, including the printing of the bags, took more time than expected and the first bags of the Saint John Valley Brand potatoes were not on the market until the last week of November.

Before I continue with the progression of events, I perhaps should regress and delineate the reasons for Saint John Valley Brand and the objectives of the brand.

The Potato Leader Committee took a look at what was happening to N.B. tablestock potatoes in the marketplace - P.E.I. was taking a share of the market once held by N.B. - not only in Ontario, Quebec, Boston but within our own province. The main reason for this was quality. Poor quality of N.B. potatoes was identified as the reason for declining market shares. During the 82-83 season, the P.E.I. 10 lb. poly York Brand potatoes were outselling N.B. potatoes in supermarkets in all our larger centres.

With the problem identified and consideration given to results of recent studies on consumer attitudes toward tablestock potatoes, the six (6) objectives included in the Saint John Valley Brand proposal are as follows:

1. To improve the quality of N.B. tablestock potatoes sold in N.B.

2. To market a 10 lb. pack of uniform-sized potatoes.

3. To improve the image of N.B. tablestock potatoes with both wholesalers and consumers in N.B.

4. To increase the market share of N.B. potatoes within N.B. from 66% to 80%.

5. To market test a washed premium poly pack labelled by type.

6. To generate a higher return to the producers and shippers.

It was decided that since this was a new venture, we would keep the brand to a 1 size pack and market it only in N.B. and N.S. at the beginning. In retrospect, this was good strategy because we had problems, some expected and some unforeseen.

The product is a 10 lb. poly bag of washed Russet potatoes (Russet Burbank, Belrus, Acadia Russet). The size range specified is a 2 1/4" minimum to a 7 oz. maximum. The quality is supposed to be better than Canada No. 1 standards - i.e. no defect tolerance. The bag contains a "guarantee of quality" and the N.B. Grown logo. The bags are also coded as to whom they were packed by.

It may be worthwhile to note here that the York Brand, although a Canada No. 2, is that on size only. The potatoes are smaller than allowed by the Canada No. 1 regulations but they are uniform in size and of superior quality.

There were problems in getting the shippers to agree on the 2 1/4" minimum but we felt that we had to have a better product in order to compete with the Island pack which was already established on our market. The average consumer is not aware of the size specifications for No. 1 and No. 2. They think that No. 1 means better quality than No. 2.

As I mentioned earlier, Gary is going to address the subject of distribution so I won't say any more about what happened between the end of November when the first bags of potatoes reached the produce counters until mid-January, when the promotion campaign was launched.

Funds were allotted under the N.B. Grown Logo Program of the A.S.A. II Sub-Agreement for promotion of Saint John Valley Brand. Proposals were submitted by three different advertising agencies and Dickson Young and Associates from Halifax were selected to handle the campaign. Let me say that compared to most campaigns, the budget for this promotion was very low and Dickson Young were generous with the amount of work they did for a small fee.

At any rate, the promotion consisted of newspaper ads (1 per week for 3 weeks) in 3 English dailies and 3 French weeklies promoting Saint John Valley Brand and offering a chance to win a trip for two to Freeport, Bahamas. Entry coupons were put in the bags of potatoes and consumers had to try the potatoes in order to obtain the coupon. Posters similar to the ads were distributed to the stores for point of sale promotion. I have a poster in case you have not seen it previously.

The coupons were slow to come in at first, probably because they were in the bottom of the bags but in the last week, the response is picking up. We have received several notes along with the coupons praising the quality of the potatoes and especially the uniform size for baking.

So far, I have painted a rosy picture, but I have to be honest and say that the launching of this new brand has not been without problems.

First of all, the bag did not meet federal inspectors' approval because the shipper's name was not on it and they objected to the term "Russet". Many of our shippers have been using that term for a few years but it is evidently not legal. We were, however, permitted to use the first run of bags within the province.

The second problem was the lack of in-plant inspection for the local market. The inspectors tell us they must give priority to export shipments and do not have time to inspect potatoes for in the province. We feel that inspection is necessary for all potatoes but especially for a brand that is demanding superior quality. Paul Read, Inspector for the Potato Agency, has been doing in-store inspection and has reported violations of the brand specifications. However, it is too late to establish a good image once the potatoes have reached the wholesalers and are on the produce counters. After some poor shipments, a meeting was held with the shippers and I must say the quality was improved.

Thirdly is the ever present problem with poly bags and lights in the stores. Gary has tried to keep shipments small but we have some educating to do of produce management.

Lastly, we have received criticism from shippers who decided not to pack the brand but who feel that Saint John Valley Brand is out to put them out of business. As I said earlier, the motive behind the project is to prevent P.E.I. potatoes from increasing their share of our markets.

I have said it to the shippers and I truly feel that if we don't do something to compete against the Island Brands, then in a few years there would be no market in N.B. for N.B. Grown Potatoes. A produce manager in Saint John told me he was selling York Brand 10-1 over N.B. I checked with him last week and he said he is still selling a lot of York but the ratio is down considerably. I have talked to consumers in Mall Displays all over the province and the most common comment I have heard is "why can't we buy good N.B. potatoes in the stores?".

Saint John Valley Brand is a premium pack of a special variety - baking potato designated for a specific segment of the market. With the numbers being packed, there is no way it can monopolize the market but we do hope that it will improve the image of N.B. table potatoes and get our consumers back to buying N.B. Grown.

The 83 growing season was a good one - finally and you have quality potatoes to pack this year. But I would like to believe that the introduction of the Saint John Valley Brand has made all shippers more conscious of quality and that everyone is doing a better job in packing table potatoes. Paul Read and Marcel Maranda tell me they are finding very few quality problems this year.

I have with me a study recently completed by Agriculture Canada on consumption of tablestock potatoes in Eastern Canada and the results show that consumption of potatoes is declining especially among younger families who are more health and fitness conscious and less traditional-minded in their meal planning. Meat and potatoes once a day is no longer considered necessary. The industry, therefore, has to look at these results and improve the image of the nutritious, delicious potato.

In the introduction, I included future development as a topic for discussion. At this time, it is impossible to say what is going to happen with this Brand in future years. At the end of this season, the committee will take a look at what has happened and make recommendations.

In spite of the problems I do feel there is a future for Saint John Valley Brand in all markets and that the objectives outlined earlier can be attained.

In closing, I would like to say that I have learned a lot through my experience with Saint John Valley Brand and have certainly found out that it is no easy task to pack a good quality 10 lb. bag of potatoes, but it is a challenge!

Thank you for your attention and I will ask Gary to address the subject of distribution.